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THE PLACE OF SURGERY IN THE TREATMENT OF CANCER.[1]

By SIR STANFORD CADE, K.B.E., C.B., D.Sc., F.R.C.S., F.R.C.O.G., M.R.C.P.,

London.

THE place of surgery in the treatment of cancer is manifold. The ideal is a complete removal of the tumour resulting in eradication of the disease; this, regretfully, is achieved only in a minority of patients. There are, however, many other ways in which surgery can play a useful part: diagnostic biopsy, palliative control of the disease, alteration of the anatomical, physiological and hormonal states, relief of pain and prophylaxis in some well-known precancerous conditions.

A better understanding of the natural history of cancer in many sites has resulted in a more accurate assessment of both the usefulness and the limitations of surgery. A stricter selection of cases suitable for surgery has not only brought in its train improved results—namely, a smaller operative mortality and a longer survival rate—but also has resulted in technical improvements and led to the abandonment of surgery in the treatment of certain types of tumour. A good illustration is the more detailed knowledge of the various types of brain tumours. At first the technical advances in neurosurgery were followed by attempts at the removal of any intracranial tumour, when this became technically possible; but a study of the after-results of surgery indicated limitation of surgery to the less malignant types of brain tumours. Another instance is the restriction of a block dissection of the neck for cervical lymph node metastases to cases fulfilling the following criteria: (i) those in which the lymph nodes are enlarged, the so-called prophylactic block dissection being thus obviated; (ii) those in which the lymph nodes are free from the main vascular bundle and pharynx, the operation being thus limited to the strictly operable group; and (iii) those in which the primary growth is definitely controlled, the disappointment of a local recurrence soon after the neck dissection being avoided. Experience has shown that to transgress these limitations is not in the patient's interests.

A further example is the acceptance of simple orchidectomy combined with radiotherapy to the abdominal lymph nodes as the method of choice in the treatment of testicular neoplasm, and the abandonment of the so-called "radical" operation as irrational in the light of greater knowledge of the spread of the disease.

Experience has shown that in certain stages of cancer, surgery, however perfect technically, is actually harmful. This applies to the stage III cancer of the breast, and it is in this connexion that Haagensen introduced the term

[1] Read at a plenary session on "Cancer", Australasian Medical Congress (British Medical Association), Ninth Session, Sydney, August, 1955.

"categorically inoperable", although technically operation is possible in such cases. Combination of surgery and radiotherapy also alters the extent of the surgical act and its timing. An example of this is the management of some primary malignant bone tumours, in which pre-operative irradiation delays surgery and sometimes avoids it altogether.

Physiological Advances.

Surgery to alter function as opposed to surgery of ablation or destruction is now better understood. Examples of this are orchidectomy in cancer of the prostate and oophorectomy in cancer of the breast. These procedures, simple in execution, are not new; removal of ovaries in advanced breast cancer was first thought of and practised by Sir George Beatson at the Glasgow Cancer Hospital as long ago as 1896, and orchidectomy had a slight vogue in the treatment of prostatic enlargement more than twenty-five years ago. As a result of the production of synthetic œstrogens by Dodds and the pioneer work of Huggins on the physiology of the seminal vesicles and testes, these procedures become justified in certain stages of disease. Huggins has extended this field to bilateral adrenalectomy, which has been rendered possible by the advent of cortisone. More recently, Luft and Olivecrona have shown that hypophysectomy can be of value in the treatment of some patients with prostatic and mammary cancer.

Advances in Technique.

The technique of surgery has altered considerably in recent years. The advances in modern anæsthesia, the abundance of a variety of antibiotics, the use of ancillary diagnostic aids such as arteriography and tomography, the control of blood loss and shock, a better understanding of the importance of fluid and electrolyte balance, adequate pre-operative preparation and careful post-operative care—all these have widened the scope of surgery of cancer beyond anything dreamed of even one generation ago.

These advances can be assessed by the lowering of operative mortality, the reduction in the incidence of local recurrence, the diminution of morbidity and the extension of the operative field. Modern technique can ensure safety of the patient if shock is prevented, minimized or remedied by modern anæsthesia and blood transfusion, and in visceral surgery when restoration of anatomical integrity is accomplished without obstruction or leakage. These technical advances require skill, meticulous attention to detail, and above all perfect anæsthesia providing muscular relaxation and a bloodless field. The use of relaxants and of hypotensive anæsthesia permits such delicate technique and precise anatomical dissection.

Biopsy.

The risk of disseminating cancer by the performance of a biopsy is now considered to be negligible and probably mythical. The importance of establishing a definite diagnosis outweighs these theoretical considerations. The field of biopsy is as wide as the site distribution of the disease itself. In accessible cancer—skin, mouth, pharynx, œsophagus, bronchus, rectum, lymph-node enlargement, bone tumours—biopsy is essential as a preliminary to a major surgical procedure. It would be unthinkable to the modern surgeon to ablate a limb, excise the œsophagus or perform an abdomino-perineal excision of the rectum without definite proof of the presence of cancer. In the case of a small and doubtful lump in the breast, "look and see" is safer and quicker than "wait and see". On general principles the removal of a small mammary tumour is always indicated; it rids the patient of the tumour, establishes a diagnosis and, if cancer is found to be absent, gives complete peace of mind, and if it is present leads to early radical treatment.

Radical Surgery.

The usefulness of radical surgery has been questioned recently, and there is a tendency towards less radical procedures. How much these views are based on statistical inaccuracy, on mediocre surgical technique, on poor surgical judgement, on despondency or cynicism is difficult to say. It is true that surgery of gastric and œsophageal cancer gives meagre results; but it is not true that minor surgery such as simple mastectomy with or without the adjunct of radiotherapy is comparable with radical surgery in early breast cancer. Neither do small, chicken-hearted, conservative resections of the colon or rectum or mouth cancer lead to success, whereas wide excisions do so not infrequently. Certain classical procedures remain the greatest safeguard against local recurrence, although they do not provide a guarantee against distant blood-borne metastases. These major procedures—radical mastectomy, colectomy, excision of the rectum, block dissection of the neck, gastrectomy, pneumonectomy, wide ablation of limbs, and many others—should, however, be undertaken only in well-selected cases, strictly limited by accurate assessment of operability and in the light of the natural history of the particular tumour.

A modern conception of the value and limitation of surgery taken in conjunction with the results achieved in certain sites by accurate and adequate radiotherapy has led to a better selection of patients for operation and to better timing of the surgical act. Thus in certain sites the early, small, favourable lesion should be treated preferably by irradiation, and the disease in a late stage or radio-resistant disease, and the disease unsuccessfully treated by irradiation should be submitted to surgery. Examples of these *par excellence* are cancers of the penis, the vocal cord, the tongue. In these sites radiotherapy should be tried first. The reverse holds good in cancer of the breast, the early favourable tumour being better treated by radical surgery and the advanced tumour by radiotherapy.

At the other end of the scale, surgery is now applicable to advanced local disease previously considered inoperable; these newer methods—pelvic viscerectomy, total laryngo-pharyngectomy with immediate reconstruction, multi-visceral resections—will be considered in greater detail.

Pelvic Surgery.

Pelvic viscerectomy was first advocated and practised by Brunschwig. It is based on the observation that in many cases pelvic cancer, especially that originating in the uterus, often remains localized when direct invasion of adjoining viscera has occurred, without spread to the liver or other metastatic lesions. In such cases removal of the pelvic viscera — the sigmoid, rectum, bladder, uterus, urethra and vagina — in fact, the ablation of all pelvic contents, has become an established surgical procedure compatible with prolonged survival and subsequent reasonable activity and enjoyment of life. Control of bleeding is achieved by ligation of both internal iliac arteries; deviation of the urine is effected by transplantation of ureters into an isolated loop of bowel. The separation of the urinary flow from the colostomy opening adds considerably to the patient's comfort; the urine remains clear and is collected into a modified De Rutzen bag, and recurrent ascending infection of the kidneys is thereby avoided. Survival up to five years has been achieved. The limiting factor is the involvement of the pelvic fascia; if the tumour has progressed beyond the pelvic fascia by direct extension, this operation can no longer clear the disease. Pelvic viscerectomy is mainly indicated in cases of uterine cancer with extension to other pelvic viscera; but it can also be performed for primary cancer of the bladder, rectum or sigmoid colon which has involved adjoining viscera.

Multivisceral Abdominal Resection.

Removal of the stomach, spleen, part of the colon and jejunum, Whipple's operation for carcinoma of the pancreas, removal of part of the colon and of the spleen for large tumours of the kidney, excision of part of the anterior abdominal wall, all are at times necessary. All these operations are not only practised, but achieved with a reasonable operative mortality, and give the patient a better chance of survival.

Surgery in Cancer of the Pharynx.

An important landmark in surgery of cancer of the pharynx was Wilfrid Trotter's operation, the lateral trans-thyroid pharyngotomy described by him in 1913. However, the operation was limited in extent, and so failed to achieve control of the disease. Wider excisions resulting finally in total laryngo-pharyngectomy were introduced, and methods developed by which the pharynx can be reconstructed and normal swallowing reestablished. These methods hold out promise of controlling pharyngeal cancer by a surgical procedure which mutilates no more than a simple laryngectomy.

Palliative Surgery.

Palliation aims at relief of symptoms and prolongation of life, and occasionally gives many years of survival. Relief of symptoms can be achieved by the removal of fungating, bleeding masses of tumours, by palliative simple mastectomy or by the ablation of a limb. It can be life-saving by the resection of "string" carcinoma of the bowel causing obstruction, even in the presence of visceral metastases. Palliative resections of the colon and rectum are accepted measures. Palliative subtotal gastrectomy for a carcinoma of the pylorus and even palliative resection of the œsophagus are often worth while. Relief of symptoms—chiefly jaundice—by short-circuiting operations is obtained in cancer of the pancreas. Transplantation of ureters into the bowel or into a newly made artificial bladder fashioned from a segment of the large or small intestine may give considerable relief to patients with inoperable carcinoma of the bladder, or when both ureters are involved in pelvic cancer.

Surgical Relief of Pain.

Intractable pain can be relieved by antero-lateral tractotomy at a suitable level, by pre-frontal leucotomy if life is otherwise a burden, by section of nerve roots, by injection of alcohol into the theca. These measures are reserved for the hopeless cases as an alternative to drugs or when drugs no longer help the patient.

Adrenalectomy and Hypophysectomy.

In hormonally dependent cancers of the prostate and breast adrenalectomy and hypophysectomy are of value in about one-third of the patients. The indications are disseminated skeletal and visceral disease, no longer controllable by the longer-established methods of treatment, such as radiotherapy, or the administration or withdrawal of hormones. The main effect of adrenalectomy or hypophysectomy is relief of pain from skeletal metastases. Only a proportion of mammary and prostatic cancers are hormonally dependent, and there is so far no test to indicate whether the operation is likely to succeed or not. The improvement in the successful cases is most dramatic—often a restoration to a normal existence of patients in the most advanced stages of the disease and untreatable by any other means.

The Prophylactic Role of Surgery in the Prevention of Cancer.

Certain conditions are known to lead to cancer if allowed to persist and develop over a sufficiently long period. Examples of these are leucoplakia of the mouth or vulva. Local excision of such lesions, of benign melanoma, and of areas of chronic skin lesions such as Bowen's disease, often prevents malignant degeneration which is otherwise likely to occur. Congenital polyposis of the colon inevitably results in cancer of the bowel, and a total colectomy with either a permanent ileostomy or in selected cases an ileo-rectal anastomosis prevents the development of malignancy. Localized thyroid swellings, the benign adenoma or cyst of the thyroid, the nodular goitre, are precursors of cancer in a proportion of cases. It is well known that cancer of the thyroid is of greater incidence in goitrous districts than in non-goitrous areas; there is also evidence that carcinoma of the thyroid occurs more often in the goitrous gland than in the normal one. Similarly, carcinoma of the gall-bladder is nearly always associated with preexisting gall-stones, and a small percentage of chronic gastric ulcers eventually develop into gastric carcinoma. Surgical removal of the diseased area—be it thyroid, gall-bladder, stomach or colon—thus prevents the development of cancer in these organs.

Conclusion.

The place of surgery in the treatment of cancer is important. Although surgery is no longer the only weapon available, and although there are for different sites, at different stages of the disease, other therapeutic measures—radiotherapy, cytotoxic poisons, hormones—yet not until we achieve, to quote Sir Gordon Gordon-Taylor, "the vision splendid, which for us is that long-desired day, perhaps not too far distant, when in the cure of cancer gross mechanical destruction and cruel mutilation of human tissues shall no longer be required"—not till then can mankind turn its back on surgical excision, ablation or destruction of tumours. Till this is achieved, every advance in technique and in thought is a step forward towards the control of tumours, prolongation of life, relief of symptoms. Thus surgery remains a living virtue, the practice of which brings hope to the patient and a spiritual satisfaction to the surgeon.

CANCER CONCEPTS.[1]

By SIR PETER MACCALLUM,
Melbourne.

PROPER concepts of disease processes are essential both to the pursuit of investigation of these and to any intelligent action for their prevention or arrest. Wrong concepts are unhelpful, wasteful of effort, or hindrances. Concepts therefore merit very careful examination in relation to the observations and interpretations about which they cluster. They are often not easy to state, and often we must wait on fresh observations, new techniques and the social urge to develop these aids to understanding.

There is no lack of social urge in the case of cancer. The very success of measures based on medical research directed against other diseases has prolonged life and, despite the real advances that surgeons and radiologists have made in dealing with them, brought cancers into grim prominence as causes of death. Cancers kill at all ages, and differ in incidence with age, sex, race, community, geography, occupation, habits and even religious practices. There is, therefore, much to observe, record, analyse and test, and there is much, too, to learn about the proper collection and handling of such data, if they are to be of use and not misleading.

The specious statements that "nothing is known about cancer" and "no man knows the cause of cancer" are commonly made, thoughtlessly no doubt, by medical men who should know better. Thousands of articles in journals and books in medical libraries bear witness against them, as does the unceasing work of the many competent investigators in well-equipped laboratories, who daily produce cancers at will. A great deal is known about hundreds of cancers, and known causes run into hundreds as well. Moreover, doctors daily diagnose, treat and cure indubitable cancers as they do other diseases.

The same people would not say that nothing is known about inflammation, or that no man knows the cause of inflammation, for they know a great deal about many inflammations, and know numerous causal agents. They will diagnose, treat and perhaps cure these conditions. The concepts of inflammatory processes and the appropriate means of their prevention and control are familiar and more advanced than in the case of cancer, to which still clings much of the mystery that, in the past, was common to all disease.

[1] Read at a plenary session on "Cancer", Australasian Medical Congress (British Medical Association), Ninth Session, Sydney, August, 1955.

An ancient conception of the nature of cancer was that of an invading parasite of external origin forming a lump. Its destructive characters did not distinguish it clearly from many inflammatory and other lumps. Recognition of the nature of metabolic deposits, cysts, malformations and other swellings accounted for some; the identification of bacterial and other parasites enabled others to be segregated. The process is still in progress. The idea that one or other of these agents might be specifically responsible for the remaining tumours considered cancerous was persistent. This was but natural while the nature of the proliferative reaction in chronic inflammatory processes was not understood. Histology and the further study of bacteria steadily dispelled the claims advanced for a causal relationship with one organism after another. The last of the agents transmissible externally and most plausibly capable of sustaining a concept of a causal role are viruses. They cannot be so easily dismissed.

The study of cells as the biological units of bodily structure and function, and of their behaviour in conditions of disease, gradually made it possible to recognize cancers as special forms of cellular proliferation and to distinguish them from the proliferations accompanying inflammations. It is well to remember the limited life history of all tissue cells relative to that of the body they compose, and their essentially deciduous and expendable nature. Maintenance of a living tissue implies a ceaseless process of balanced growth activity in a controlled, circulating, replenishable medium, and an orderly succession of cell generations preserving faithfully the cellular regional pattern appropriate to the organ or tissue in its progressive stages. Persistent conditions of an inflammatory type provide a medium and stimulus for growth; but clearance of the damaging agent and its products leaves cells and tissues in a condition to restore and resume the customary regular balanced relations within the tissue and with the body generally.

The cancer concept depends on a sharp change in behaviour observed in body cells themselves. It is a change in which, relative to the rest of the body, they themselves play the part of an invading agent almost as foreign as that of a different form of life such as a bacterium or a virus, and that in a medium not altered otherwise than by the consequences of the change itself. These altered cells no longer conform internally or in external relationships to the regular pattern that characterized their predecessors, but now breed true in a persistent divergence from that pattern. When I say that they "breed true", the case of the cancer cell may be likened to that of Tennyson's Launcelot:

> His honour rooted in dishonour stood,
> And faith unfaithful kept him falsely true.

The cancer cell still wears the insignia of a body cell, but its proliferation no longer keeps the old line or subserves the needs of host-tissue maintenance. The new tissue develops a local imitative, inconstant pattern of its own, acts as an intruder and disturbs the general metabolic balance of the body. The change belongs to the cell and persists whether the inducing agent is discernible or not. Disappearance of the agent does not result in restoration of the *status quo*. With malignancy equilibrium is very seldom reached.

Dividing cells most obstinately differentiate as their *milieu* and potential dictate whether they are tumour cells or not, and in both cases their metabolic and other mechanisms are essentially the same. Hence arises the difficulty of embodying the concept of a neoplasm in a concise definition that will not apply to other proliferations. Powell White's popular descriptive definition contains irrelevancies. Ewing's attractively brief "a tumour is an autonomous new-growth of tissue" fails, because tumours are not autonomous. I agree with Nicholson (1950) that "autonomous" will not apply here except on Humpty-Dumpty's principle of making words mean what you want them to mean. Moreover, we are, all of us, good examples of autonomous new-growths of tissue. The notion outlined above may be put in a condensed form: "A neoplasm (tumour) is a mass of tissue, the definitive cells of which are cells of the body of the host that have acquired and transmit to their descendants a distinctive pattern of growth and behaviour deviating from that characteristic of the host." How satisfactory a definition is depends on what you ask of it. This one will not satisfy everybody, and doubtless Nicholson would have torn it to shreds; but it serves as a text and a test. Defining a tumour is a salutary and tantalizing exercise.

How do the bacterial and the virus hypotheses fit with such a concept of neoplasia?

The bacterial idea could do so only if the products of bacterial activity directly induced the new property in the cell—that is, were carcinogenic. There is no convincing evidence of such an occurrence. Conceivably bacterial activity, non-specifically by providing conditions favourable to frequent cell division, could accelerate the manifestation of an hereditary "susceptibility" of a tissue to become cancerous. Another indirect way in which inflammation may play a part is by localizing circulating carcinogens till an effective concentration is reached to evoke the tumour. Yet another possibility, which experimental trauma suggests, is the non-specific promotion of cancerous growth in an area in which a carcinogen has already induced a "sensitive" state of cells on the brink of transition.

The intimacy of the virus relation to the cell is a striking feature of the diseases viruses cause, and particularly here of interest are those in which cellular proliferation is a prominent consequence. In such cell division, the replicating invader diffused throughout the cell continues in the daughter cells. This tumour-like cell division may or may not be cancerous according to the definition given. If, on elimination of the virus, the cell returned to its customary state of division, the condition could not be classed as cancerous. The restoration would be comparable with that following healing in inflammation. However, if disappearance of the virus left a cell which continued the division rate and character, the proliferation would qualify under the definition. Therefore, the presence of virus in a cell with that property would not necessarily remove the proliferation from the cancer category. Further, a virus in certain circumstances may disappear, become "masked"; but since the virus may later reappear in recognizable form, the nature of the part that a virus may play is not yet fully resolved. The obligate presence of a virus in cancerous growths would require another definition. It is a wholly different concept, strictly in the same category as the bacterial one.

The study of Bittner's milk factor, commonly considered a virus, raises a number of other points that affect cancer concepts. The use of homozygous strains of mice in that study has shown that breast cancer arising in those animals results from a complex interplay of multiple "gene" and environmental factors. In affected mice the milk factor, which in certain circumstances increases the incidence and enhances the growth of breast cancers in mice, is present in many tissues and is transmitted by the milk to the offspring. It is itself variable, as other living agents are, in its characters and relations with the host. Cross-breeding of high-incidence and low-incidence strains of affected mice permits analysis of tissue "susceptibility", and shows that the "genes" control specifically the responses of breast tissue to the milk agent. The incidence of the growth is also influenced by hormones, and these themselves are influenced by the "genes". It is further of interest that methylcholanthrene (a carcinogen which is also œstrogenic) increases the frequency and accelerates the growth of breast tumours in female mice. It also accelerates growths in those in which the milk factor plays a part. Histological differences have been noted between the types of tumour under the influence of the milk factor, the œstrogens and methylcholanthrene. In this tissue, therefore, cancerous change appears in the course of its periodic proliferation and is reinforced by stimuli from various extraneous sources.

It is evident, also, that response to various stimuli does not cease with the onset of cancerous change. However, the experiments suggest that, without "susceptibility",

there would be no cancer. A "genetic" constitution and mechanism are inherent in any cellular concept. It follows that "susceptibility" is a property becoming manifest in the race from "genetic" mutation possibilities, and being handed on in associated unit fashion from generation to generation, is distributed in accordance with hereditary probabilities. In the body of the individual, it is obvious that "mutants" with cancerous characters might arise with a certain frequency in the course of maintenance or other circumstances of cell division. Certain conditions, such as the introduction of physical, chemical or biological agents into the body system-complex, increase the cell division rate and thus create the opportunity for the "spontaneous" emergence of the cancerous cell. A second concept is that such agents may act as "mutagens" and somehow increase the rate of mutation. The use of the term "carcinogenic" for agents acting in these ways is conceivably different from the application of that term to an agent which directly imparts to a cell in the orderly sequence of tissue renewal that transmissible property of disorderly proliferation which the other body cells find communally incompatible. The carcinogen in this sense "creates" the mutation. Some of these fine distinctions are as yet highly speculative. How these processes occur, whether by energy transfer and release from electron concentrations at specific regions in macromolecules, by distortion of molecular rhythms and patterns induced by chemical or physical means, or by direct or indirect influence on the "genes" and "genic" control of enzyme-coenzyme systems concerned in the cells' various activities, are matters which are engaging the attention of those whose techniques provide them with methods of attack on cellular mechanisms. These researchers seek answers to intranuclear as well as cytoplasmic questions concerning metabolism, division and heredity that bear on all cell life and on the nature of life itself. Arising from the virus hypothesis is the speculation, fantastic though it may seem, that a virus may conceivably arise from replicating particles formed within the cells themselves.

Kennaway's isolation of a carcinogenic polycyclic hydrocarbon from tar gave a tremendous impetus to the study of the structure and property of related, and also of unrelated, compounds that produced like results. As yet attempts to correlate carcinogenesis with chemical structure have had little specific success. The very variety and number of agents named suggest a response evoked in many biological situations. But this work made possible the study of cancers from their beginnings and an analysis of stages of the process hitherto out of reach. If it is remembered that nearly all the experiments proving a substance carcinogenic have been performed on animals other than man, a heterozygous creature transmitting diverse "susceptibilities", the generally applicable lessons learnt from this work have been quite invaluable.

Bearing on the concept of a "carcinogen" is the initial observation that, in a "susceptible" animal (that is, one having certain transmitted qualities), after the skin has been painted with a carcinogen, there is, before cancer appears, an interval which may be short but is often long. It is commonly brought to an end by factors that do not induce cancer in tissues which are not in the changed state initiated by the carcinogen. On injection of a diffusible carcinogen cancer may appear, after an interval, at the site of injection or remote from that site, in tissues or organs where presumably chemical affinity, function, metabolism, excretion, inflammation or other circumstance has determined a sufficient concentration to produce the evidence of "susceptibility". The sequence is an interval of enhancement of proliferation, followed by manifestation of cancerous characters, sometimes with and sometimes without other provocation. The same sort of thing may occur after radiation exposures. Once determined, the cancer pursues its own development producing its own reactions in the host. It is characteristic that the second stage of the cancer changes arises focally in the treated area, often at more than one point, strongly recalling the usual focal distribution of mitosis in replacement.

That cancers and secondary growths occasionally may disappear; that secondary deposits remain dormant for years, are most frequently of one tissue type, show vagaries of establishment after experimental transfer of tissue or tumour growths; these and other apparently fortuitous happenings have encouraged the hope that methods of immunity control of cancer may yet be developed. Cellular immunity presents very special problems. However, a recent immunological concept of cancer in a preliminary report by H. N. Green (1954), based on experimental work on the inhibition of growth of transplanted tumours by carcinogenic and non-carcinogenic polycyclic hydrocarbons, opens up a most exhilarating prospect of advance in inquiry in this field. It is postulated that the protein complexes that confer tissue and individual identity on the cell are lost by an "adaptation" of the cell under the influence of the carcinogen during the stage of continuous hyperplasia. As a result, the cell becomes antigenically "neutral" and by reason of that fact neoplastic. The "identity-proteins" are equated with the "self-markers" of Burnet's (1949) cell-recognition hypothesis. There is much consequential rethinking and research yet to be done before generally coherent ideas of cancer can take shape.

Both prevention which, as Hueper (1954) rightly insists, looms large as a public health problem, and also treatment, depend on understanding for a full measure of success. This in turn depends on inquiries designed to clarify concepts such as some of those that I have so cursorily reviewed. In that review, I have avoided the prejudice inherent in the use of the words "normal" and "abnormal". Though convenient in a general way, they can be obstructive to scientific thought. I am convinced that it is not possible to think freely and clearly about bodily processes unless it is realized that, in a very real sense, there is nothing more "normal" than the pathological. Biological processes are natural processes, and pathology is a branch of biology. What happens is what must happen in the biological situation. That is why, as understanding physicians, we dare to intervene—to see that it does happen—our way.

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THE NATURAL HISTORY OF CANCER.[1]

By E. S. J. KING,

Department of Pathology, University of Melbourne, Melbourne.

The volume of nature is the book of knowledge.
—OLIVER GOLDSMITH: "The Citizen of the World."

THE natural history of any pathological condition has an important bearing on interpretations of its nature and its relation to similar or related phenomena and may be used to throw light on fundamental biological processes. Important as these are, knowledge of this history, in a medical venue, is essential for the application of the appropriate form of treatment, for its use at the best time, for the determination of the scope and extent of any procedures and, possibly most important of all, for the recognition of circumstances in which active treatment may fail either to cure or to alleviate the condition of the patient. For these reasons knowledge of the life history of tumours is essential and, indeed, it is generally thought that we possess it in good measure. However, this is not so, and it is proposed to discuss some of the factors responsible

[1] Read at a plenary session on "Cancer", Australasian Medical Congress (British Medical Association), Ninth Session, Sydney, August, 1955.

for the incompleteness of our knowledge and problems arising from this.

The reasons for our ignorance are not far to seek. Circumstances are very different now from what they were fifty or even thirty years ago. Until the beginning of this century it was the rule for patients not to be examined until they were in an untreatable state, so that the natural course of the disease was frequently seen. We should remember that only a hundred years ago even simple ovarian cysts could not, generally, be treated. Early in this century treatment developed, and education of the public improved to the state at which many patients presented at an early stage. All of us have occasion to remember massive growths, fungating malignant tumours, extensive ulceration and gross destruction of tissue; but these are now seldom seen, are becoming rarer and, short of some serious disturbance of our civilization, will not be seen in large numbers again. Treatment has completely altered the picture by removal of the primary tumours at an early stage, by inhibition of growth, by prevention of infection and other complications and, in some cases, by acceleration of the death of the patient. In any circumstances, patients now die from causes different from those previously prevailing, and the general course of the disease has become significantly changed.

It has thus become necessary to consider tumours on a different level. Prominence is necessarily and desirably given to a different stage of the disease. With the diminution of the number of massive growths, often with repellent features (or at any rate those which excite interest and demand attention), there is an associated increased prominence of smaller and sometimes non-progressive growths. In the era of the massive, fungating, ulcerating tumours with their gross cachexia, these small tumours were overlooked or given relatively little attention. They have now come to a position of primary importance.

Information of the life history of many tumours is thus available to us, having been passed down from our predecessors, and in part is still remembered by the older members. It is now necessary to apply this to tumours seen at an early stage. This results in a number of assumptions which require careful examination. One is that all tumours are essentially similar; this very prevalent assumption is thoroughly misleading. There are not only many tumours, but each type presents in different guises; the proposition that any two tumours apparently similar will follow the same course demands careful examination. Furthermore, the small, slowly growing, often retrogressing tumours are unlike the frank cancers. There is no good information from pre-surgical times (this term is used to include radiological and related therapies), and we have to collect our own information afresh.

This is a challenge to our present generation. It involves reassessment of all the carefully collected information of generations, the reexamination of our views regarding the relation of certain small (presumably early) tumours and the massive or metastasizing (late) growths, and also the collection of new information.

Difficulties in Assessment of Tumours.

Since very few tumours are allowed to progress in their normal manner, our opinions on the way in which the big majority would have done so are necessarily assumptions. Thus we make our deductions from a limited amount of information, and the most must be made of what we have. Conclusions may be difficult and are often vitiated because of (i) errors of diagnosis, (ii) misinterpretation of the nature of conditions and (iii) false assumptions of the nature of some "tumours".

Errors of diagnosis may arise at either macroscopic or microscopic examination. It has been accepted now for many years that histological examination of every tissue is essential. But still occasionally diagnoses must be made without complete information. In the case of macroscopic diagnoses, it is noteworthy that the ancient definition of a tumour as being a mass or lump is still prominent in people's minds. Of course the surgeon at operation has the opportunity for only one examination; the patient's time under observation prior to operation may have been short, and it may not be possible to demonstrate the features of that inexorably progressive growth which is the characteristic of the true malignant neoplasm. Despite difficulties, the experienced surgical pathologist will usually be able to arrive at a correct opinion. The commonest form of error is to regard some inflammatory conditions, because they produce a large mass, as malignant. If a mistake should be made, then observations derived from this particular specimen will give a very wrong idea of what malignant tumours will do.

Histological diagnosis is usually easy and unequivocal. But there are some well-known examples in which the criteria of malignancy are inadequate and unsatisfactory. This occasionally applies in many parts of the body, but is a frequent difficulty in the case of the thyroid gland. A tissue which, on all histological criteria, is simple in character may give rise to the "benign metastasizing goitre", and many examples of small nodules present very serious difficulties in determining rate of growth and likelihood of development of metastases. It should be said here immediately that we have no adequate histological criteria for the probable development of metastases, and can make an assessment only by our experience of other presumably similar conditions. Other examples could be quoted; but the essential point is that histological examination is not the last word in determination of malignancy; it is a most important and very valuable (and usually accurate) means of assessment, but it is merely a stepping-stone towards complete knowledge of a growth. The only complete criterion is the clinical course of the condition.

Misinterpretation of conditions, usually in the direction of non-malignant states being regarded as malignant, has been fairly common. This is for several reasons: (i) the two conditions malignant and non-malignant are frequently associated and may be difficult to disentangle; (ii) the one may be present in so many cases as to appear to be a necessary precursor of the carcinoma; (iii) pathologists have been themselves responsible, in so far as they have not clearly distinguished various forms of conditions from each other.

These conditions fall into the following two main groups: (*a*) the hyperplasias, commonly due to hormonal activity, and (*b*) malformations, often present at birth, but sometimes becoming apparent only later. (*a*) The outstanding example of the first is hyperplasia of the breast. In many cases the diagnosis is simple and the differentiation from carcinoma is clear, but in other more gross examples the conditions are confused and, even when they are differentiated, diagnosis and treatment are commonly based on fear rather than on careful and judicial assessment of available information. (*b*) Malformations include conditions such as cystic hygroma, multiple nervous lesions in von Recklinghausen's disease and some of the teratomata. Difficulties arise when malignant tumours do actually develop in these, and occasionally conditions which are often put in this group are actually, in fact, malignant from the beginning. However, when the innocent forms of conditions are confused with the malignant forms, then again the natural history of cancer and the effective treatment will be misunderstood and misinterpreted.

False assumptions as to the nature of some tumours must be regarded largely as the responsibility of the pathologist. The best example is the squamous cell carcinoma of the skin. Recently it has been observed that some nodules develop in the skin but after a time retrogress. If these are examined histologically, there is found a proliferation of the epithelium which closely resembles that seen in some of the carcinomata. It is quite clear that these have, until recently, been so diagnosed. The importance of the distinction is obvious; inclusion of such nodules amongst a group of presumably malignant neoplasms would make a significant difference to the results of any form of treatment applied.

Some Characteristic Conditions.

Although many of these conditions may be associated with, and may even resemble, tumours, they differ from

them in an important particular: the tissues themselves have not become permanently changed, as is shown by the way in which they will return to their previous condition after removal of the stimulus. In so far as frequently the nature of the stimulus has not been understood and therefore it could not be removed (and indeed this still applies in some cases), the distinction has not always been clear. However, careful observation together with some of the modern experimental work has clarified the situation.

Leucoplakia of the mucous membrane has been regarded as a precancerous condition, and in some cases it is difficult to say whether a tumour has actually begun. Furthermore, the condition seems to have a different significance in different places; for example, in the vulva, presumably because the stimulus cannot be removed, the probability of development of carcinoma is much greater than elsewhere. On the other hand, in the mouth, removal of a tooth, cessation of smoking or change of diet may modify and cause reversal of the condition. For these reasons some cases of leucoplakia are not clearly distinguished from carcinoma, and indeed are included in groups of cases of carcinoma.

Multiple polyposis of the bowel is a frequent precursor of frank carcinoma and, as all pathologists know, the determination of innocence or malignancy in a polypus is an extremely difficult matter. Here again confusion may occur between what is, at the time, an innocent tumour and a carcinoma—with corresponding confusion of ideas regarding the course of the malignant growth.

In the breast various degrees of lobular hyperplasia may occur, and some of these are histologically extremely difficult to distinguish from frank tumours. Furthermore, a small area of malignancy may develop in a relatively large mass of hyperplastic tissue and be overlooked, and thus cause confusion when metastases develop. To what extent the inadequacy of the criteria of malignancy in the breast is responsible for some of the good results obtained by treatment is at present impossible to assess.

Tumours of the skin which resemble carcinoma, but have a different life history, have been mentioned. One group of these, of a very characteristic form and typical life history, has been designated *molluscum pseudocarcinomatosum*; but examination of conditions of this kind indicates that there are several other groups of similar conditions, slightly different in form, which still require careful observation and recognition as being innocent conditions.

Ulcers of the stomach are an excellent example of the difficulties which may be present in various parts of the body. About three decades ago it was considered, on histological grounds, that about 80% of such lesions were malignant. Subsequent experience has shown that this assessment was grossly inaccurate, and at the moment it is about 5%. This emphasizes the difficulties and also shows the necessity for continual and constant reassessment of observations.

Innocent Tumours.

Innocent tumours, by definition, should be excluded from consideration here; but in all biological states we find gradations between very different conditions. Not only are there the borderline cases which are not easy to place in either group, but also some tumours, which at one stage of their life history are regarded as innocent, become malignant later on. An example of this is the mixed salivary tumour.

An important feature is that many conditions regarded as tumours are, in fact, not neoplasms. The essential feature of a neoplasm is its persistence and inevitable progression. Some of the conditions so confused are inflammatory in nature, and when the exciting factor is removed they disappear. Some of the best known are localized hyperplasias in the ductless glands or in organs obviously affected by their hormones. These include nodules in the thyroid, parathyroid and suprarenals, masses in the breast and myomata of the uterus. The retrogression of these conditions when the hormonal stimulus is removed or ceases is, in itself, evidence of the non-neoplastic nature of the process.

The importance of excluding the large number of non-neoplastic conditions from the innocent tumours is that otherwise, as has happened in the past, information regarding their method of growth is regarded as evidence (of a kind) of the nature of the neoplasms in general and even of malignant tumours.

Malignant Tumours.

It is only when the various complicating conditions—inflammatory states, hyperplasias, malformations and truly innocent tumours—have been cleared away that we are able to consider the truly malignant tumours. When we attempt to elicit a "normal" history, we find that there is no such thing.

There are extreme differences in rates of growth, extent of spread and degrees of invasion of tissues in different tumours, but this is also true in the same kind of tumour. Differences occur at different ages; for example, the most malignant tumours often occur in the very young and the very old. There are sex differences, and there are certain racial and geographical differences which are probably due to environmental factors not yet elucidated. Apart from these, there are also gross differences to be seen, particularly in certain tumours, which are not explicable on age, sex, climatic or other factors. Though occasional examples will be found in most tumours, these differences are encountered especially in the melanomata, some of the thyroid tumours, breast tumours and chorion-epitheliomata.

In some cases melanoma grows quickly and produces metastases early, and the patient dies within a few months; but in other cases the patient dies of metastases perhaps twenty-five years after the removal of the original tumour. Similar extremes will be found in the other examples mentioned, and even in a slowly growing tumour like the squamous cell carcinoma of the skin or lip, occasionally rapid growth and early and extensive development of metastases will be observed.

Related to this is the phenomenon of natural retrogression of tumours. This is a well-established idea to be found in all comprehensive accounts of tumours; but actual cases are difficult to secure. In most of the likely cases final proof, in the form of post-mortem examination, is not obtained. However, the phenomenon appears to occur in cases of fibrosarcoma of the naso-pharyngeal region in young males, in melanoma, in chorionepithelioma and in neuroblastoma of the adrenal. On the other hand, inhibition of tumours is a well-known phenomenon and is usually due to the action of hormones; and their use has become a recognized method of treatment. Although hormones are responsible for the great majority of cases of inhibition or temporary retrogression of tumours, recent work on other inhibiting agents indicates that we still are at an early stage in the understanding of this phenomenon.

Metastases.

The development of metastases is one of the essential features of most malignant tumours, but it is a phenomenon which is not at all understood. The factors determining it, apart from the occasional effects of trauma, are quite unknown.

An important point is that in many cases cells have escaped from the original growth at a very early stage in the development of the condition. Indeed, the development of the metastases appears to depend, not on the escape of cells from the tumour, but on their growth and development when they arrive at some other part of the body. It is probable that cells escape in practically every case, and that it depends on the characters of the tissue, the influence of hormones and other factors whether the cells grow in their new site. This has an important bearing on extensive local procedures designed to prevent metastases.

Influence of Treatment.

Since very few growths run their normal course without interference, the progress of tumours, as modified by various forms of treatment, now becomes the "normal". What is not generally recognized is that with the removal of the tumour much information is lost, and far-reaching and erroneous conclusions are likely to be drawn from a relatively small amount of evidence.

The results of treatment must be considered carefully, but accurate assessment is not always easy. In the first place there are the conditions which are not in fact carcinomata. Differentiation may have been difficult, but if these conditions are included in any group of neoplasms, these will have a significant influence on any figures adduced. In almost all of them removal will result in cure without recurrence.

The slowly growing tumours must be carefully distinguished from those more rapidly growing. It is important to appreciate that slowly growing tumours are less likely to be regarded as significant by the patient until they have arrived at a relatively large size, so that usually they have been present for a considerable time when first seen. On the other hand, the rapidly growing tumours attract attention early, and the patient comes for treatment at an earlier stage. This is responsible for the observation that has been made and recorded several times in the literature recently, that growths which are treated at a later stage often have a better prognosis than those treated early. The apparent paradox is, of course, due to the essentially different kind of tumours which are being compared. The early stages of development of the tumour and the associated histological picture give clear indications in these cases of the probable course of the condition, and this is borne out by experience.

Effects of Treatment.

It may sometimes be possible to eradicate the growth completely, but, particularly in view of the early development of metastases, this frequently is not so. It is a common observation that after treatment, particularly extensive surgical procedures, the general condition of the patient deteriorates relatively rapidly. This is partly due to the progressively rapid development of the disease, particularly in the later stages; this will be discussed later.

There is, however, an actually accelerating effect of the operation. This is of two kinds. (*a*) It has been shown experimentally that, in animals, one tumour has an inhibiting effect on the development and growth of other tumours, and although it is uncertain as yet to what extent these observations can be transferred to human beings, it does conform with the observation of more rapid growth of metastases in man after removal of the primary tumour. This is to be correlated with the observation mentioned previously, that the development and growth of the metastases do not depend so much on the escape of cells to various parts of the body as on the factors determining their growth once they are there. (*b*) Another factor is the importance of mechanical injury in the metabolism of cells. The disturbance of protein metabolism after injuries is now well known, although there are many gaps in our knowledge regarding the mechanism and the actual cells in the body most affected. That there is some disturbance of this kind, resulting in a more rapid growth of tumours, may be seen in cases in which patients with malignant disease are involved in accidents; whether there is influence on the tumour cell or some change in the surrounding connective tissue is quite unknown. This kind of effect in some of the larger surgical procedures should always be considered.

Importance of Type of Treatment.

The form of treatment employed in any given case will depend, in some measure, on the natural history of the tumour, and on the other hand the results of various forms of treatment will be used as evidence regarding the nature of the growths. In this regard, since in many cases the type and extent of the procedure will be determined by the presence or absence of metastases either in the lymph nodes or in distal organs, the time at which metastases occur is most important.

This is particularly significant in the case of the extensive procedures. If the tumour spreads to lymph nodes, then these must be removed with the tumour. If the spread occurs by permeation of the lymphatics as well as by embolism, then the intervening tissue should also be removed. In many cases one type of procedure, such as block dissection, is used in one part of the body for one tumour, and another type—for example, separate removal of the tumour and of the lymph nodes—is employed in other circumstances. It is obvious that general practicability and experience rather than pathological principles determine the procedure which is adopted.

Since quite often the ideal procedure cannot be followed, it is important that the best should be done for the patient. As was pointed out by Rousseau, the most important feature of any treatment is that it should not do harm. Clearly, with the removal of the tumours there must be some damage to tissues, and the advantages obtained by the removal of growth must be assessed against any injury produced.

When metastases have already occurred and progress of the disease is inevitable, the results of the more serious surgical injuries must be assessed. It is very doubtful whether the loss of a limb, presence of a colostomy or other type of fistula and other disturbances are justified when the patient has only a short time in which to accommodate himself to them. Furthermore, extensive operations that are sometimes suggested are quite unjustifiable for some of the conditions which resemble carcinomata but are not actually malignant.

Quite often the primary growth produces serious disturbance, or is itself so unpleasant (for example, in the case of a large fungating tumour or an ulcer) that its removal is desirable even though there is no question of cure of the patient. Similarly the removal of the tumour may prevent the occurrence of complications such as obstruction to various tubes of the body or the advent of infection, even when cure is not possible, and this is greatly appreciated by the patient.

It is important, therefore, that when treatment is being undertaken a clear distinction should be made between those cases in which the procedure is palliative in order to reduce morbidity, and those in which actual cure is expected. In most forms of carcinoma the results of treatment fall into the first group and here conform with the highest Hippocratic traditions. When unfounded claims for possible cures are made it is because the natural history of the tumours is ignored.

Investigation of Results of Treatment.

The necessity for a complete "follow up" is a proposition to which all members of the profession pay lip service, but it is still woefully inadequate. Some cancer registries are doing yeoman service, and the record departments in hospitals are also collecting useful information. The difficulties in keeping in touch with patients are due to a mixture of natural indolence, lack of interest on the part of the patient and occasional active disinclination to providing information. However, there are other factors.

It has been mentioned earlier that the disease does not progress at a regular rate, but that the patient's general state often deteriorates much more rapidly in the last stages—sometimes in merely a matter of a week or so. This is due to involvement of so much of an essential organ that it is unable to carry out its function—for example, the liver or suprarenal—or to the development of some other complications such as hæmorrhage or severe infection. It is a common experience to see a patient relatively well and perhaps without any symptoms, and then for him to die within two or three weeks.

Tumours, even the very malignant varieties, do not necessarily produce symptoms themselves. Symptoms are due to complications such as secondary infection, and—the result of this—hæmorrhage, obstruction of tubes or, as has just been mentioned, involvement of essential organs

to such a degree that they are unable to function. This failure often occurs quite suddenly. Thus a patient may be examined, apparently well, and may be expected to live at least several months, and when investigation of his failure to report occurs it is already difficult to trace him.

It is important that it should never be assumed that patients who are not found are probably alive; indeed, the reverse is usually the case. In attempting to assess results it is not so necessary to prove a patient dead as to prove that he is still alive.

When patients are followed carefully it is usually found that a far greater proportion of them die, even in the early stages of the disease, than is generally appreciated. This is true even under the new circumstances in which we have to consider the natural history; that is to say, even with treatment most malignant tumours are still fatal conditions.

Conclusions.

Fundamental changes have taken place in the life history of tumours because of the application of treatment methods to the majority of human cancers. The natural history of the disease has thus been modified.

In most malignant tumours treatment is usually carried out at an early stage of the disease, and it is now necessary to assess the nature and probable course of that condition from macroscopic and microscopic information available at this stage. At the same time it is important to remember that, even at an early stage, in most cases the disease is a generalized one.

Since it is not possible, because of the generalized nature of the disease, to cure most of these conditions, it is important to assess results and the advantage to the patient in terms of control of morbidity rather than on the mortality figures.

A continued investigation of the disease in these new circumstances is essential, and indeed at the present stage such increase of knowledge is even more important than the results of the treatment of patients.

When we know more of the fundamental changes which occur in the cells during the development of malignancy, many of our difficulties (particularly with regard to differentiation of malignant from non-malignant conditions) will disappear. At present we must depend on general phenomena of growth as observed in a large number and variety of cases; and thus a definition of tumours becomes necessary.

Many definitions have been made; but briefly it may be said that a neoplasm is a growth of tissue which may be intermittent but is inevitably progressive. Because there is still confusion between non-neoplastic and neoplastic malignant conditions, there are widespread erroneous ideas of the natural history of the cancer and real results of treatment. When non-malignant conditions are excluded, careful "follow up" of patients shows that modern treatment is not generally effective in the cure of the disease. On the other hand, it does make a very great difference to its morbidity. The common over-optimistic view needs to be assessed by repeated observations, and thus the development or further development of thorough "follow up" systems is essential to provide information which is still lacking to a degree not generally appreciated.

RADIOTHERAPY IN THE TREATMENT OF CANCER.[1]

By B. W. WINDEYER,
London.

AT the present time in every nation there is an increasing awareness of the importance of cancer, of its increased incidence and the toll which it takes of the life and health of the community, and of the individual cases of suffering which it causes. It is well that stock should be taken of the methods of treatment that are available and of any measures that can be taken to make them more effective. It is my object to place before you the place of radiotherapy in the fight against this scourge, which has now become the most frequent cause of death of any single disease. In Great Britain it is estimated that 2400 new cases of cancer occur each year per million of population, and it has been further estimated that radiotherapy, in some form, is at present used in the treatment of approximately 50% of all cancer patients. It is therefore a method of treatment of some importance in the consideration of the cancer problem as a whole.

Radiotherapy is the treatment of disease by the use of ionizing radiations. This now means the use of X rays of varying quality, ranging from radiation generated at low voltage for the treatment of superficial lesions, through the so-called deep X-ray therapy in the 250-kilovolt range to the supervoltage quality of radiation with much greater penetrating power generated at 1,000,000 volts and over. It also comprises the use in the treatment of disease of the radiations from radioactive substances both natural and artificial.

Radiotherapy is used in the treatment of malignant disease both for curative and for palliative purposes, and it may be useful to give some consideration to what has and can be achieved in certain situations and in certain types of malignant disease.

It is not possible to cover the whole field of radiotherapy in the course of a discussion such as this, as that would mean dealing with many types of growth in almost every situation in the body, and therefore I have merely chosen some examples for illustration purposes.

In the common malignant diseases of the skin, rodent ulcer and squamous-cell carcinoma, which are so common in Australia, radiotherapy is used in a high proportion of cases. In early lesions of both types, adequate radiotherapy will secure permanent healing in as many as 90% to 99% of cases with excellent cosmetic results, and is at least a good alternative to surgical excision. For the more advanced growths, surgical removal of which would mean grafting and sometimes considerable disfigurement if it could be done at all, radiotherapy is to be preferred. It may be used in combination with surgery in such a way as to limit the surgical procedure necessary, besides giving a greater chance of permanent freedom from recurrence.

In epithelioma of the lip the same considerations apply as in skin cancer. Extensive excision with the necessity of subsequent plastic reconstruction can be avoided by the use of radiotherapy in almost all cases, except when bone is invaded by direct extension of the neoplasm. With such bone involvement the results of radiotherapy are poor, and there is the likelihood of the development of prolonged and painful necrosis, so that it is necessary to carry out radical surgical ablation even at the expense of some mutilation. In the lip, too, it may be advisable to use a combination of surgery with radiotherapy. Plastic repair may be necessary to close the gap in the tissues and to prevent loss of saliva when an infiltrating growth has been destroyed by irradiation.

Radium needle implant has become the method of choice in the treatment of the primary lesion in growths of the anterior two-thirds of the tongue. At the Middlesex Hospital 29·6% of all patients with growths in the anterior two-thirds of the tongue survived for five years, and in the earliest cases results are even better. Figures from Paterson of Manchester, from Berven in Stockholm, and from Sir Stanford Cade show a five-year survival rate of 56% to 65%. Lesions of the floor of the mouth, of the buccal surface of the cheek and of the faucial region can be successfully treated by various radiotherapeutic techniques when the alternative would be a hazardous and mutilating operation, perhaps in a frail and elderly patient.

Cancer of the maxillary antrum is usually treated by a combination of radiotherapy and surgical excision. The various combined techniques which have been developed in

[1] Read at a plenary session on "Cancer", Australasian Medical Congress (British Medical Association), Ninth Session, Sydney, August, 1955.

different centres have improved the results in this situation; but unfortunately, owing to difficulties in diagnosis, there are still a great number of patients who come for treatment with advanced disease, and palliation is all that can be achieved.

The optimum treatment of cancer of the breast in its various clinical stages gives rise to continual discussion and to continual reassessment. Radical operation as the sole method of treatment is being limited to the earlier cases. In those in which the condition is of doubtful operability or frankly inoperable, when the disease still remains localized, treatment is now by radiotherapy alone; a proportion of the patients obtain permanent regression and lasting freedom from disease; in many others palliation and relief of symptoms is achieved. In stage II cases with axillary metastases there is more general use of radiotherapy as a pre-operative or post-operative measure, and even in stage I cases it is being used increasingly for the treatment of possible invasion of the intercostal glands.

In cancer of the uterine cervix, one of the commonest cancers in women, and one which produces much distress, radiotherapy has had some of its greatest successes. In the treatment of this disease there is a place for both surgery and radiotherapy. There are indications for each method of treatment, and the maximum benefit that can be given to the numerous patients with cervical cancer must result from a continual and impartial assessment of these indications in the light of technical advances in surgery and radiotherapy.

The seventh report on the results of radiotherapy in cancer of the uterine cervix, edited by Heyman of Stockholm, and compiled from the records of patients treated in clinics all over the world, gives details of 64,236 patients treated by radiotherapy. In this huge series there was an overall relative apparent five-year recovery rate of 32·6%. These patients included many who were treated in the early days of radiotherapy. The comparative figure for five-year recovery rate of patients treated in the last five years covered by the report had risen to 36·9%.

In seminoma of the testis, radiotherapy has caused a complete change in the prognosis. Simple orchidectomy alone and later the radical operation of Chevassu and Hindman were able to produce a five-year survival rate of certainly not more than 25%. With a combination of simple orchidectomy and irradiation to the most probable paths of lymphatic dissemination, 67·5% of five-year survivals have been obtained in 77 cases of seminoma at the Middlesex Hospital, and 28% of five-year survivals have been obtained in 39 cases of teratoma of the testis.

There are some primary bone tumours in the treatment of which radiotherapy has an important part to play. Osteoclastoma may arise in situations which preclude any possibility of surgical removal, and whatever one's views on the proper treatment of this condition in a situation readily accessible to operation, there are many of these tumours for which radiotherapy is the only practicable method. As the result of radiotherapy they can be made to decrease in size, with relief of symptoms, and to become sclerosed and inactive. Osteogenic sarcoma, although a radioresistant tumour, can with high dosage be made to regress, to sclerose and to heal in some cases. The former attitude that radiotherapy had no part to play in this condition is now undergoing change, and it is being more generally used, particularly in the form of supervoltage radiation, as the first method of treatment, and the performance of amputation is delayed.

Apart from its value as a curative agent in many situations, radiotherapy has a wide field for palliation in malignant disease. Skeletal metastases can be made to heal with relief of pain; dysphagia can be relieved in cancer of the gullet; in bronchial cancer, hæmoptysis, pain, dyspnœa and compression of the superior *vena cava* may be relieved; and in advanced cancer of the breast or uterus ulceration can frequently be healed, with elimination of distressing and foul-smelling discharge. In the reticuloses and some leuchæmias patients can be kept comfortable and at work for long periods. In Hodgkin's disease, at the Middlesex Hospital we have obtained five-year survival in 30% of a series of 225 histologically proved cases, and there has been complete freedom from disease for as long as nineteen years in some of them.

Radiotherapy is not, however, a simple and easy method of treating malignant disease. In many instances, if cure is to be obtained it is necessary to carry the dose to such a level that severe and painful reactions are sustained by the patient. A prolonged course of treatment for cancer of the fauces or cancer of the breast may be an even greater ordeal for the patient than the relatively quick convalescence from a surgical operation. There are dangers, too, of important sequelæ when heavy dosage has had to be given, and the consequences of faulty technique and inaccurate dose distribution may be severe and long-lasting. Necrotic ulceration and necrosis of bone and cartilage may cause great distress and are slow and difficult to heal. Such complications, though to some extent inevitable in a new and expanding method of treatment by which attempts are being made to control different types of growth which were previously untreatable, are becoming rarer with more efficient and suitable apparatus, with increasing knowledge of dosage measurement and dose distribution, and with accumulated experience and knowledge of radiobiological effects and tissue reactions.

In order to obtain the best results, radiotherapy needs a special type of organization with some concentration of facilities. It is necessary to have an adequate range of apparatus so that the quality of radiation necessary and the means of applying it are available for the needs of each individual patient. There should be low voltage X rays for the treatment of superficial lesions, and X rays of medium voltage the so-called deep X-ray range—for the treatment of many types of lesion, including cancer of the breast, Hodgkin's disease and other reticuloses, and for a great deal of palliative work. At the present time supervoltage radiotherapy has acquired an established place, not only for the treatment of deep-seated tumours, such as those of the bladder, the uterus, the lung and the œsophagus, but also because it is more efficient in many more superficial lesions, and because it can be used with greater accuracy and with less discomfort to the patient. The choice between massive units of cobalt^{60} and X-ray apparatus, such as a linear accelerator for producing supervoltage radiation, may be dictated by local facilities; but some such apparatus is necessary if the maximum benefit is to be given by radiotherapy to many of the patients.

It is necessary to have an adequate supply of radium or radon or some substitute for these, such as cobalt^{60} made up appropriately in needles and tubes for interstitial or intracavitary work, when high local dose is necessary. Some radioactive isotopes are used as substitutes for radium, such as cobalt^{60} in telecurie units or in the form of needles and tubes, tantalum as wire for implantation purposes, and Au^{198} in the form of gold grains, which is an efficient substitute for radon seeds. P^{32} incorporated in plastic provides a useful method of delivering β radiation by surface application, and flat plates of strontium are replacing the old radium plates. Au^{198} in colloid form is of some value when applied by instillation into the pleural or peritoneal cavities for the treatment of malignant pleural effusions and ascites.

The scope of radiotherapy has been increased by the use of radioactive isotopes, which have a degree of selective absorption and can be given by mouth or by injection. P^{32} in the treatment of polycythæmia and I^{131} in the treatment of some thyroid cancers are the outstanding examples. Unfortunately, with these exceptions, the high hopes entertained of this new method of radiotherapy by the internal administration of radioactive isotopes have not been fulfilled. For the efficient use of all this equipment it is necessary to have a thoroughly trained team and adequate ancillary services. There should be several trained and experienced radiotherapists, and with them in such an organization it is essential to have physicists

specially trained in the clinical dosage problems of radiotherapy.

For each patient who is undergoing a major course of radiotherapy the treatment must be individually planned so that the most accurate and efficient dose distribution can be devised. This work needs skill and training, and unless it is properly carried out there are great dangers of necrosis and local overdosage, especially with the more penetrating types of radiation.

Although for reasons of technical efficiency and of economy there should be some concentration of radiotherapy facilities, it is essential that this organization should be closely linked with general hospital services and, if possible, with teaching departments of basic medical sciences. The radiotherapist's work must be carried out in close collaboration with his colleagues in the other clinical specialties, and the standard of achievement will generally depend on the closeness of the cooperation. If any progress is to be made, there is also the need for close association with those working in the disciplines of physics, biochemistry and pathology. In fact, they are all part of the necessary team. The treatment of cancer today demands team work of a high order. The physician, the surgeon, the pathologist, the biochemist, the radiotherapist and many others all have their contribution to make. Surgery, radiotherapy and chemotherapy, the main methods of treating cancer at present, all have their indications and their contraindications. They will be used to the best advantage for the benefit of the cancer patient if there is a greater realization of the value of such team work.

STRESS IN CHILDHOOD.[1]

By D. R. MACCALMAN, M.D., F.R.C.P. (Edinburgh),
Professor of Psychiatry, University of Leeds, England.

THE concept formulated by Koch, Pasteur and others that each individual, well-defined disease has its own specific cause is one which has dominated medical thought up to the present time. Much attention has been centred upon the pathogen itself, sometimes to the exclusion of the terrain in which it operates; but Pasteur attached as much importance to the latter as to the former. His theory about the development of immunity proved that he appreciated the importance of the organism's capacity to produce specific adaptive reactions against individual pathogens. This in turn provided a great step forward in treatment, for it was shown that many diseases could be successfully controlled by imitating and complementing these adaptive reactions.

The Theories of Selye.

A contribution to medical knowledge which may prove to be of a similar heuristic value is the theory of stress introduced by Selye. It represents, as Selye (1954) himself suggests, the negative counterpart, or mirror image, of Pasteur's theory. It holds that many diseases have no single cause, no specific pathogen, but are largely due to non-specific stress, and to pathogenic situations which result from inappropriate responses to such non-specific stress, in the form of a general adaptation syndrome. The apparent cause of illness is often an infection, an intoxication, nervous exhaustion or merely old age. But actually a breakdown of hormonal-adaptation mechanisms appears to be the most common ultimate cause of death.

When the organism is subjected to stress—in the form of injury, infection, emotional trauma, excessive cold or exhaustion—an "alarm" reaction takes place. The pituitary and the adrenals produce an excess of the hormones which combat stress and preserve the welfare of the body. For a time this adaptive measure is successful—the organism learns to live with its stress, as it were. However, if the stress continues, the mechanisms break down, and the body succumbs to the wreckage produced by these excess hormones, originally intended as an emergency defence against a state of stress.

Selye formulated his theory as a result of experiments with animals, but soon he noted that remarkable parallels could be drawn between the post-mortem findings in rats subjected to excessive injections of somatotropic hormone (S.T.H.) and desoxycorticosterone (D.C.A.), and findings in human subjects who had died of cardio-vascular, renal and other common fatal disorders. Many clinicians throughout the world have noted an alarming increase in the early onset and incidence of disorders such as coronary and cerebral thrombosis, rheumatoid arthritis, hypertension, diabetes, peptic ulceration and other conditions usually associated with chronic worry, overwork, fatigue and the rush of modern industrial cities. Selye also noted that it was not always necessary for an actual excess of corticoids to be produced, for virtually the same results were obtained by enhancing the effects of comparatively small quantities of corticoids through stressors. Chronic malnutrition, emotional tension and most comparatively mild stressors act predominantly through this mechanism on man.

Physical Effects of Stress.

In human beings the psychological effects of stress have been observed in naturally occurring conditions. The literature on psychiatric war casualties provides many instances, as we find in the work of Kardiner (1941), of Grinker and Spiegel (1945), and of MacCalman (1954). Prolonged separation from the mother has been found by Bowlby (1951), by Spitz (1945) and others to have pronounced pathological effects upon development. In animals stress has been studied chiefly in the laboratory, and there has been accumulated a considerable literature, usually under the title of "experimental neuroses".

Schaffer (1954) attempts to fit these results into a theoretical framework in neurophysiological terms. He regards a stressful situation as one in which there is a major disruption of the relationship between an organism and its environment. Disruption takes place when the organism meets a novel situation for which it has no adjustive response readily available. Usually a trial-and-error period of behaviour takes place until a solution is found and adjustment takes place. But if a no-solution situation is reached stress tends to occur.

The degree of motivation is also important. In this connexion we note Fuller's (1952) definition of a stressful situation as one in which adjustment is difficult or impossible, but in which motivation is overwhelmingly strong. Non-adaptive behaviour appears when the organism is caught between the devil and the deep sea, between an overwhelming urge to discover a method of adjusting and complete inability to find it.

In such a situation the organism's behaviour becomes constricted and stereotyped. Failing to benefit from past experience, the organism repeats the same set of actions again and again. The rate of the animal's activity is either accelerated or diminished. In Pavlov's inhibitory type motor responses become so slow that a cataleptic state occurs. In the excitatory type behaviour goes to the other extreme and is not only accelerated but also disorganized. Previously established conditioned reflexes are lost, and a sensitization takes place which "triggers off" the animal by the slightest stimulus. The "gun-shy" dog is a good example of this phenomenon. In the excitatory type there may also be changes in blood pressure, respiration and pulse, loss of control of bladder and bowel, muscular tremor *et cetera*.

In the comprehensive paper already mentioned, Schaffer (1954) describes how the learning process under stress differs from the kind of learning found in non-stressful situations. There is a greatly increased sensitivity of learning, which fixates whatever response is dominant at the time and prevents it from being extinguished even

[1] Read at a meeting of the Section of Neurology and Psychiatry with the Section of Pædiatrics, Australasian Medical Congress (British Medical Association), Ninth Session, Sydney, August 20 to 27, 1955.

when it is followed by nothing but unfavourable consequences. Further, the fixated responses are usually unadaptive. Masserman's (1943) cats selected a response which exposed them to a noxious stimulus; Ullman's (1951) rats developed a compulsive eating symptom; Wolfe's (1952) cat, which happened to be micturating when first put under stress, continued to do so each time stress occurred.

Behaviour under stress is therefore characterized by the following: (i) an absence of a trial-and-error period; (ii) the adoption of the dominant rather than the effective response; (iii) the repetition of a rigidly stereotyped form of behaviour which goes on often after the stress has discontinued; and (iv) the increased speed of learning certain responses.

A Neurophysiological Hypothesis.

In seeking an explanation for these characteristics of general activity and learning under stress, Schaffer (1954) proposes the hypothesis that stress brings about a shift in dominance over behaviour from cortical to subcortical centres, although the precise neural mechanism which brings about this shift in balance is not yet clearly understood. However, a striking analogy can be drawn between stress behaviour and that exhibited in animals in which the forebrain has been removed back to the level of the hypothalamus, as is shown by the work of Bard and Mountcastle (1947). In such preparations very slight stimuli will produce (i) disturbances of pulse, blood pressure and respiration, (ii) violent excitation of emotion, (iii) trembling and vocalization, (iv) decreased control over micturition and defæcation. In learning situations behaviour is constricted, stereotyped and crude.

One important difference between the behaviour of animals under stress and decorticate preparations is that emotional behaviour after discharge is shown only by the former. The decorticate animals cease their excitement immediately the arousing stimulus is removed, whereas animals under stress continue their agitated behaviour long after the experience, such self-sustained activity being due to the setting up of thalamocortical reverberating circuits. Under stress, therefore, the cortex continues to play some part in the maintenance of aroused excitation, even though its functioning is restricted and subcortical centres are released to play a dominant role.

Under naturally occurring conditions one would not expect, nor does one in actuality find, an exact similarity in behaviour to that exhibited in experimentally controlled conditions. It is difficult to believe that the cortex can be as completely isolated physiologically from the subcortical centres by trauma, disease or inhibition as it can be by operative procedures. We have noted also that we must not minimize the part which the cortex continues to play in the maintenance and elaboration of excitation subsequent to stress-induced breakdown. However, enough similarity exists to suggest that there is a relation between the degree of disruption of the organism-environment relationship and the extent of control exercised over behaviour by cortical and subcortical centres. It appears as if aroused excitation which is unable to find a response channel through which to discharge, results in the centre of control passing from the sophisticated cortex to the more primitive centres in the diencephalon. If the disruption of the organism-environment is not severe, this shift of control is not extensive, behaviour still shows cortical variability and direction. The more nearly the disruption becomes extreme and the situation becomes one of stress, the more will the shift in dominance take place and behaviour be altered.

Stress Under Naturally Occurring Situations.

There are various naturally occurring situations in which the subcortical centres tend to be dominant. For example, it is likely that instinctive behaviour in the newborn will become fixated. Tinbergen (1954) in his careful study of birds has shown that the newly hatched black-headed gull acquires, with great rapidity, a food-seeking, pecking motion. This is normally directed to its mother's bill, which is characterized by a vivid orange patch. But Tinbergen showed that the same behaviour, once acquired, could be elicited towards a variety of shapes and colours of roughly the same type. Further, the same behaviour persisted without reinforcement for a long time. Similarly, Lorenz (1937) demonstrated that an even more remarkable and persistent fixation took place in goslings, which acquired the habit of following the first large, moving object they saw when first hatched. If that moving object happened to be a man, the goslings followed him, apparently expecting the food and protection which they should have received from the mother. So much fixated was this behaviour that, according to Lorenz, it persisted throughout life, the animal being unable to join with its companions in the flock or even to take part in mating behaviour. This phenomenon has been termed "imprinting". How persistent is the fixation was shown in another experiment, in which the first thing presented to the eyes of a budgerigar remained for ever its only object of attachment, and its days of courtship were spent in trying to make love to a ping-pong ball (Grey Walter, 1953).

Hebb (1949) has drawn attention to the fact that a type of learning takes place in human infants, which is little affected by set, and is highly resistant to extinction. The blinking of the eyes to a rapidly approaching object, for example, is learned in infancy and persists throughout life without need of reinforcement. Conel (1940) gives further evidence, in his anatomical studies, that subcortical rather than cortical centres function in learning. Infants born without any cerebral hemispheres may, nonetheless, carry out all the normal early activities, including sucking and crying (Greenacre, 1953). Evidently, therefore, much early activity must be at a subcortical level.

Mammals, as Grey Walter (1953) points out, seem to be less susceptible to mental imprinting than birds, though it has been observed in sheep with a social implication. If a lamb is removed not only from its mother, but from all other sheep, for the first ten days after birth, it loses its sheep-like character of following the flock and does not develop normal ties with it. The missing object here is not a mother figure, though lambs in an early phase seem to be as sensitive to the lack of this as is the human child.

The Stress of Maternal Deprivation.

Returning to the concept of stress as a situation in which there is a major disruption between an organism and its environment, we may note that this occurs in its most acute form in the human being when there is a complete break in the relationship between the infant and the mother. Here, indeed, it seems that the infant is faced with a no-solution situation in which motivation is very strong. Further, the situation is one of frustration, because an adequate object for the aroused drive essential to the motivational structure of the organism is not forthcoming from the environment; the result is that, instead of extinction of the drive-instigated behaviour, there is continued internal stimulation which the infant cannot reduce.

One would expect to find approximately the same characteristics of behaviour in children suffering from complete maternal deprivation as those already described in the behaviour of organisms under stress. Changes in the general activity of deprived children have been described with surprising uniformity by many authorities throughout the world. An extensive and detailed account has been given by Bowlby (1951). The vast majority of infants show the symptoms of Pavlov's inhibitory type, though some show excitatory symptoms as a result of the first shock of deprivation. However, the characteristic picture is one of decreased sensitivity and slowing down of motor responses, with unadaptive and stereotyped movements. Spitz and Wolfe (1945) have coined the phrase "anaclitic depression" to describe this condition of constricted functioning.

Turning to the learning mechanism of infants under this form of stress, we note that there the crying or mourning response is fixated and is not extinguished even when it is followed by nothing but favourable circum-

stances. The infant breaks down into a mournful and tearful anguish whenever it is aroused from its listless state, no matter how kindly and lovingly it is treated by persons other than the mother. This is in considerable contrast to the infant's responsiveness to social situations prior to the deprivation. No attempt is made by the infant to seek a substitute gratification from other mother-figures, the infant continuing to turn away sadly from all other adults. This inconsolable state is most marked in children aged under twelve months who formerly had a very close relationship with their mothers—in whom, in short, the drive is strongest.

Learning in general is inhibited under stress. The infant appears to learn no new skills, and loses some of the signs of development which he has already attained. Spitz and Wolfe (1946), using the Hetzer-Wolfe baby tests, showed that a group of 61 children brought up in an hygienic institution exhibited a catastrophic drop of developmental quotient between the ages of four and twelve months. At the earlier age the average developmental quotient was 124. By twelve months it had sunk to 72, and at the end of the second year it had sunk to 45. Similar figures were found by other authorities to show a retardation in children during their second and later years.

Regression to a more infantile level of behaviour is, of course, a well-known clinical finding in children experiencing stress for one reason or another. Sibling rivalry, for instance, may produce a surprising degree of regression in eating and toilet habits, in language and in behaviour. This is usually regarded as a semi-sophisticated response operating through the older child's desire to identify himself with the rival sibling. In view of Schaffer's hypothesis that under stress a shift in emphasis occurs from cortical to subcortical centres, we must consider whether the behaviour of the jealous child should not be regarded primarily in relation to subcortical processes.

Summary.

This paper deals with the subject of stress in childhood on a mainly theoretical level. We have noted that the general adaptation syndrome of Selye attempts to explain all disease in terms of the organism's efforts to adjust itself to situations of stress. An attempt has been made to correlate the findings of experimental psychology with the characteristics of stress disorders. The similarities between the symptoms of stress behaviour and learning processes to those which appear when a shift in dominance takes place between cortical and subcortical dominance are noted. A parallel is then drawn between the characteristics of behaviour under stress, and those of the behaviour of infants who have suffered from maternal deprivation in the first years of life.

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STRESS IN CHILDREN: THE STUDY OF A GROUP OF PRE-SCHOOL CHILDREN.[1]

By F. W. CLEMENTS,

Institute of Child Health,[2] University of Sydney.

SOME years ago I was studying a group of pre-school children, whose mothers complained that they "would not eat". As the investigation progressed it became apparent that these children could be roughly divided into two major groups. The first comprised those whose nutritional state and general physical development were satisfactory and who, in fact, ate enough of the right kinds of foods; the problem of failure to eat existed largely, but perhaps not entirely, in the mothers' minds. These women expected their children to eat larger meals than they needed and become concerned when they declined part of a meal. The other group included children who constantly had a variety of foods fads, with demands to be fed accompanied by undue slowness. Further investigation of the children in this category revealed that they were frequently difficult to manage in other areas, and that they often showed signs of being strongly emotionally disturbed; in other words, difficulty with eating was but one feature of a syndrome.

It became apparent that for a fuller understanding of difficulties around the feeding situation it was necessary to set up a comprehensive study of a group of children, in which it would be possible to make an inquiry into the character of the mother-child relationships. The Lady Gowrie Child Centre, Sydney, offered the necessary facilities, for the staff of this kindergarten have over the years established good *rapport* with the people of the district, and the majority of the mothers whose children attend there are accustomed to discuss their problems with the director, who has been in that position for about twelve years. In addition, I had established good relationships with a number of mothers, and felt that this could be extended to the majority of those whose children attended the centre.

The Lady Gowrie Centre is located in Erskineville, an inner industrial suburb. Although there are ten blocks of Housing Commission flats near the centre, much of the housing is substandard. Some families have purchased their own homes, which they endeavour to keep in good repair, but many tenanted houses are in a poor state of repair and are generally inadequate. The majority of the families whose children attend the centre have lived in the area all their lives; another 25% have come into the area since their marriage, with the object of saving money to buy a home in one of the outer dormitory suburbs; others have drifted in because hardship or instability has reduced their resources and they have been attracted by the low rents of shared inadequate quarters.

[1] Read at a meeting of the Section of Neurology and Psychiatry with the Section of Paediatrics, Australasian Medical Congress (British Medical Association), Ninth Session, Sydney, August 20 to 27, 1955.

[2] Endowed by the Commonwealth Department of Health.

The policy of the Lady Gowrie Child Centre, which is an ordinary kindergarten in respect of its programme, is to place a child's name on a waiting list when requested by the mother, and call it up when its turn comes and when it has reached its third birthday. One of the few requisites is that the child should live within half a mile or so of the centre. No embargo is placed on the children whose mothers work; but, since the director expects each mother to take her turn in the domestic tasks of the centre, slight preference is given to the children of mothers who do not work outside the home or who work part-time. The centre also has an unwritten policy of extending a helping hand to a family in serious financial or domestic trouble by admitting any pre-school children from such families.

The centre provides a programme from 9 a.m. to 3 p.m., designed to meet the emotional and social needs of children from three to five years of age, and their health is under constant supervision. They are given mid-morning and early afternoon snacks and a midday meal, after which they rest or take a nap. The meals provided during the day aim to give the children about one-third of their daily Calorie requirements and about half their daily requirements of protein, minerals and vitamins.

The Hypothesis.

The hypothesis tested in this study was that the emotional environment of the home, including the quality of the mother-child relationship, has a pronounced influence on the physical and mental health of the pre-school child.

The Method.

In this study the two components were investigated—the home environment of the child and the child itself.

The Home Environment.

The period from two and a half to five years of age is the time of greatest socialization of the child. During this time he should be constantly widening the circle of his acquaintances and adding new experiences. Every new venture into the unknown, be it at the personal or physical level, probably creates in almost every child some apprehension or anxiety; the amount will depend upon his previous experiences and the quality and strength of the support he receives. Some anxiety is certainly normal. To be deprived of the adequate support of a friendly, understanding person with whom the child can share this anxiety, if necessary, is believed by many workers to create stress within the child.

For this reason we decided to include a full study of the home environment. This included the home itself as a building, the indoor and outdoor play space, the activity space for the family, and especially the child, and the composition of the household. On the personal side information was gathered about the human relationships in the family and within the household, if it was an extended family, as many of those in the study were. Marital relationships and the health of parents and other children were noted. An attempt was made to gauge the quality of the mother-child relationship in both directions. Some of these data on the home environment were collected by the director of the centre; the remainder I gathered at my interviews with the mother. The director made home visits, but she also drew upon her knowledge of the mother derived from frequent conversations at the centre, and added information gained from observing mother and child together.

On the basis of all the information collected, the mothers were placed in one of the five categories listed in Table I. Despite an intensive effort by the director and myself, we found it impossible to classify four mothers. Two of these are regular visitors to the centre, but they did not reveal significant aspects of their personality.

The Children.

Data about each child were collected in the four areas set out below. I studied the physical growth and the posture, and gathered most of the psychosomatic details either during the repeated medical examinations or from interviews with the mothers (sometimes the fathers also came), and from observations of the child in the normal activities of the centre. The director and teachers supplied information about the child's emotional and social development and behaviour, and initially drew attention to speech defects. Most of the studies extended over two years, between the child's third and fifth birthdays.

Physical Status.—The character of the weight curve over a period of not less than six months, usually up to two years, was studied. The quantity of subcutaneous fat, the quantity and quality of muscle tone, skin texture and appearance, and the physical activity of the child (*joie de vivre*) were noted. A child was rated as unsatisfactory in this area if the increase in weight was less than the normal for longer than three months within the previous six months, and if the musculature was soft and of poor quality.

TABLE I.
Classification of Mothers.

Category.	Description.
1	Loving, affectionate and apparently secure women; also includes those mothers who had anxieties about some phases of child care when the child was first admitted to the nursery. These were relieved through discussions with the doctor or kindergarten staff. This group includes women who were separated, divorced or deserted, but who had apparently made a reasonable adjustment to the situation.
2	Women who exhibited more pronounced degrees of anxiety about child-rearing, associated with obvious inconsistencies in management; for some mothers periods of poor handling of the child, associated with temporary domestic, housing, financial or marital upset. These mothers ultimately responded to help.
3	Inadequate mother, characterized by pronounced inconsistencies in the management of the child; most of these women had had poor relationships with their own mothers. This category also includes the strongly narcissistic women.
4	Mother's emotional stability greatly affected by gross marital disharmony—for example, divorce, separation, desertion and, although no open breach, considerable discord because the husband was a heavy gambler or drunkard.
5	Mother dead, or had deserted children, or was chronically ill and incapable of caring for the children adequately (for example, severe epilepsy). This group also includes mothers who, although living in the same house as the child, are working full time and leaving the full care of the child to a number of other people.

Psychosomatic Status.—Inquiry was made into a history of asthma, abdominal pain, periodic headaches, cyclic vomiting, vague pains in the limbs, hives, excessive clear nasal discharge, regular enuresis (including poor control in the day-time), fairly constant dark rings under the eyes not associated with generally increased pigmentation, vasomotor lability, including excessive pallor not due to a low hæmoglobin value, and high skin sensitivity. A study was made of any of these conditions when they were present. A child was rated as unsatisfactory in this area if it exhibited one of the foregoing features, except vasomotor lability, which was accepted as a positive sign only when it accompanied one of the other features.

Posture.—The child was examined for curvature of the thoracic and lumbar segments of the spine, and the position of the shoulders. A child was listed as unsatisfactory if the posture was greatly slumped.

Emotional Development and Behaviour.—The emotional status was investigated in regard to the following points: (i) primary habit disturbance of eating, elimination or sleeping; (ii) secondary habit disorders, gratification habits (thumb-sucking, body-rocking, excessive masturbation), tension habits (picking, scratching, hair-pulling, nail-biting, head-banging); (iii) quality of personal relationships, behaviour with other children and with adults; (iv) general demeanour: from a happy and contented appearance to general discontent, with anxiety or restlessness, poor concentration, aggressiveness, sulkiness or fre-

quent temper tantrums, and hyperkinesis; (v) speech defects, especially dyslalia. A child was rated as unsatisfactory in this area if it had signs in any section, except that a fairly constant facial expression of anxiety discontent was accepted only if it accompanied one of the other features. Before a child was classified as being emotionally disturbed it had to exhibit the signs over a relatively long period, and a single sign was not accepted unless it was exhibited strongly. It so happened that all the children classed as unsatisfactory had several signs. For example, one child was a slow, difficult feeder, it frequently engaged in body-rocking, and its facial expression was fairly constantly that of anxiety. This child had poor relationships with other children and adults.

Other Observations.

In presenting this material it is not proposed to give a long list of the abnormalities displayed by each child. Our experience has been similar to that of the workers at the Tavistock Clinic (Ainsworth and Bowlby, 1954), who found that symptoms and signs tend to appear and disappear and reappear, and that the clinical picture may change with extraordinary rapidity. In physical growth and posture the patterns remain constant over relatively long periods; some of the psychosomatic symptoms also tended to be constant—for example, enuresis—but others, such as excessive pallor and dark rings under the eyes, fluctuated and could be clearly related to periods of greatly increased stress. Other psychosomatic symptoms were more episodic still, especially abdominal pain and vomiting. The emotional signs fluctuated probably more than any others.

Therapy.

An inquiry of this kind should not be made unless the investigator is prepared to undertake therapy when it is needed and is requested by the parents. It should be stressed also that the teaching staff of the Lady Gowrie Centre regularly discuss with mothers any problems they raise, so that therapy is a regular feature of the centre's work. As the medical officer, I had been doing this irregularly before the study commenced; but as problems became exposed in the lengthy and searching interviews with the mother, and she asked for help in their solution, this was given within my limitations.

A number of children and their mothers were referred to a child guidance clinic for confirmation of the diagnosis and the proposed line of therapy. Some mothers of even moderately severely disturbed children have not, as yet, sought help, and as a rule none has been offered. To a few of these mothers, as an experiment, advice was tendered; by all these it was rejected, and the good relationships between the mother and myself have been lost.

The results of the therapy where sought were, in most cases, gratifying and did thus help to confirm the diagnosis.

Results.

The Physical, Social and Emotional Health of the Children.

Up to the present time[1] 78 children and their mothers had been studied in sufficient detail and for a long enough period to enable a diagnosis of their state of health to be made and the mother to be classified. Another 40 children have been partly studied; about half of these left the centre before the study was completed, and the remainder are still being investigated. A diagnosis is not made until the child has had a chance to adjust itself to the new experiences of joining the centre. The director and her staff need time to establish a good *rapport* with the mother so that home visits will be fruitful. As the doctor, I feel that the mother needs to become familiar with the routine of the centre and to meet me on at least one occasion before I can expect her to talk freely about her problems and concerns. In our experience a child has to be in regular attendance at the centre for three months before all these conditions are fulfilled.

[1] The time when this paper was written.

This report is about the 78 children fully studied. The data presented here are in relation to the four areas detailed above. It is pointed out that at each medical examination all systems were examined for diseases of organic origin and for physical defects. A number were detected; and when this was considered advisable, the mother was informed and an appropriate line of action was suggested. These findings are not given here. This report is limited to an account of the incidence of abnormal signs and symptoms which are frequently attributed to other than an organic origin.

The children were classified according to the number of areas in which abnormal signs and symptoms had been recorded. These results are as follows (78 children):

No areas involved, 21 children.
One area involved, 15 children.
Two areas involved, 22 children.
Three areas involved, six children.
Four areas involved, 10 children.
Speech defects and other areas involved, four children.

A word of caution should be given against translating the figures obtained in this study to any other group of children. We have reasons to believe that the incidence of disturbed children amongst this group was probably higher than would be found in the population at large.

The order in which the specific areas were involved proved to be of particular interest. The children who had symptoms in one area were distributed through the various areas as follows: physical status, one; posture, two; psychosomatic disturbances (enuresis), three; emotional disturbances, nine.

Of the 22 children who exhibited signs and symptoms in two areas, two children showed them in the emotional and physical, one in the emotional and postural, and nineteen in the emotional and psychosomatic areas. The psychosomatic disturbances were as follows. Six children had enuresis alone; nine had enuresis and vasomotor lability; two had periodic abdominal pain and vasomotor lability associated with anxiety-provoking situations; one had abdominal pain of the same character; and one had a rash on the palms of the hands, diagnosed as pompholyx.

Of the six children who had symptoms in three areas, all exhibited emotional and psychosomatic disturbances; four in addition had poor growth records and poor physical development, and two had in addition poor posture.

The four children who had speech defects had symptoms in at least two other areas.

Some of the signs studied call for special comment. Abdominal pain was studied in five children. One of these was diagnosed as having appendicitis, which was subsequently confirmed at operation. The other four children had recurrent attacks of abdominal pain, all without fever and three without vomiting in association with the pain. The mothers reported these attacks of pain, and after careful questioning it was provisionally concluded that these attacks were the outcome of anxiety. Arrangements were made with each mother to bring the child to the centre as soon as possible after an attack commenced, if the centre was open. In this way three children were examined within an hour of the onset of the attack. A home visit was made to another during an attack. As far as can be determined by a physical examination alone, these attacks were not of organic origin.

The attacks in three children were associated with anxiety, and in the fourth with fear. McKeith and O'Neill (1951) described a study based on 25 consecutive children, aged three to sixteen years, who were examined at an outpatient department with recurrent abdominal pain as the presenting symptom. In 17 of these the attacks were associated with anxiety, in three with anger, and in one with grief.

The anxiety in two children of our series was associated with unfavourable home situations, in which the mother was in great strife with other people in the house; and, strangely enough, the other occurred on a number of

occasions when the child and mother came within sight of the centre. The mother of this child found great difficulty in parting with the child at the centre, and the child responded with equal anxiety to the mother's leaving it at the centre.

The fourth child was greatly afraid of his father, who was a sailor. The father returned home for a few days every six weeks or so. He had no idea of the limitations of the achievements of pre-school children, and had on some earlier visits become extremely impatient with the child's relatively immature ways and treated him harshly. The child retired to bed with abdominal pain when his father came home. It was discovered that an elderly relative who lived next door had frequent attacks of abdominal pain, which took her to bed and brought her relatives around with sympathy and assistance. The child may have taken his cue from these episodes.

Dark rings under the eyes have frequently been noted in the physically ill child or in the child suffering from great physical fatigue (Dods, 1935). We noted that dark rings under the eyes were fairly constantly present in 27 children. They were frequently accompanied by other signs of vasomotor lability, especially pronounced pallor, which will be discussed later. For a short period the director and I made an unobtrusive inspection of each child on its arrival at the centre each morning, recording the presence of heavy dark rings under the eyes. Later in the day the director carefully questioned the mother about the child's history in the twelve hours prior to its arrival at the centre. Some children could have been suffering from physical fatigue from a variety of causes. The remainder could have suffered from stressful situations, mostly arising from severe conflicts with the mother. With regard to a number of children, we felt that we could use the presence or absence of black rings under the eyes as an indication of the quality of the relationship between the mother and child in the previous twelve hours. It is true that in these instances we were aware that the relationship was not uniformly good.

Pallor was judged in two ways—by the colour of the skin and by the colour of the mucous membranes of the gums. The colour of the skin was judged without a chart for guidance. If a child was noted to be pale at the time of the examination, repeated observations for the next few days were made of the child at play in the kindergarten. This was done by both the nurse and myself. A child was not recorded as having pronounced pallor of the skin unless this was noted on several occasions when the child was at play. The general colouring of the child's skin was taken into account, to exclude the pseudopallor of the very fair child.

The colour of the mucous membranes was matched against a series of specially prepared dental plastics. This, of course, necessitated an examination. However, before a child was judged to be abnormally pale several observations were made at intervals.

Through the courtesy of Dr. R. J. Walsh, of the New South Wales Red Cross Blood Bank Service, a hæmoglobin estimation was made of all children attending the Lady Gowrie Centre. Four children were found to have a hæmoglobin value less than 12·0 milligrammes per 100 millilitres. Medicinal iron was prescribed for these. They had been noted as pale. The other children who were recorded as suffering from pallor had hæmoglobin values within the normal range. The degree of pallor was checked against the hæmoglobin readings. To do this, it was arranged that the hæmoglobin estimation would be made on a Wednesday morning. Each morning that week, Dr. G. Scott and I independently recorded our impressions of the degree of pallor of each child on a scale from zero to three. A mean of the ten observations was determined for each child. The four children with hæmoglobin values below 12·0 milligrammes per 100 millilitres were excluded from this correlation. The mean hæmoglobin values for the groups of children within various ranges of pallor ratings are shown in Table II. The differences in the mean hæmoglobin values are not significant. In addition, it was noted that a number of children who were rated as very pale had a hæmoglobin value over 13·5 milligrammes per 100 millilitres.

The Classification of the Mothers.

Each mother was placed in one of the categories listed in Table I. It was not possible to classify four mothers, for reasons already given. The records of their children

TABLE II.

Correlation of Subjective Estimation of Pallor and Hæmoglobin Values.

Range of Pallor Ratings.	Number of Children.	Mean Hæmoglobin Value. (Milligrammes *per Centum*.)
0 to 0·5	29	12·97
0·51 to 1·0	11	13·00
1·01 to 1·5	10	13·26
1·51 to 2·0	4	13·05

are not included in this series. The number of mothers in each category may be seen in Table III.

Correlation between the Child's Health and the Classification of the Mother.

The rating of the child according to the number of areas in which abnormal signs and symptoms were recorded was used in this correlation. The number of children with specific areas involved for each type of mother is shown in Table III.

TABLE III.

Relationship of the Classification and the Number of Areas Involved in the Child.

Classification of Mother by Categories Given in Table I.	Number of Areas in which Child had Signs or Symptoms.						Total.
	0	1	2	3	4	Speech Defects.	
1	16	6	4	—	—	—	26
2	4	4	5	—	—	1	14
3	—	4	8	3	6	2	23
4	—	1	3	3	2	1	10
5	1	—	2	—	2	—	5
Total	21	15	22	6	10	4	78

Discussion.

Several points in the collection of these data call for comment. It is necessary to know the children reasonably well for some months and to be accepted by them, so that the medical examination is recognized as part of the centre's routine. We found that it was important to have time to watch the children at play, and to be able to examine them at relatively short notice, if necessary, to establish the ætiology of a particular sign. The close cooperation of the director and her staff was essential if the full record was to be completed. The evidence of the emotional and social development and stability was taken from the records of case studies held by the staff on the child. An intimate knowledge of the home life could be obtained only from home visits.

The importance of these two aspects was emphasized when Dr. Scott and I attempted to repeat this study recently at two of the day nurseries conducted by the Sydney Day Nursery and Nursery Schools Association. Here each mother was interviewed and an attempt made to complete the same schedule as was used in the Lady Gowrie study. Each child was examined once, and the directors obligingly filled in that portion of the schedule completed by the director of the Lady Gowrie Centre. When all this was completed, we found that we had not a sufficiently clear picture of most children and their mothers to make similar diagnoses to those made for the Lady Gowrie children and their mothers. There are several reasons for this. Many of the mothers travelled some distance to the day nursery, left their children and

went to work near by; very few home visits were possible; and since we were not regular visitors at these nurseries, we were not accepted by many mothers or children. The turnover at the day nurseries was high — somewhere between two and three times the nominal enrolment in the year. This means that it is difficult for a director to get to know some children well.

Our experience at these two day nurseries was that, whereas the grossly disturbed child could be easily detected, the child who was even moderately disturbed might be missed, partly because of the natural anxiety which the medical examination masked, and partly because of the relatively poor relationships which we established with some mothers. It should be appreciated that these mothers did not seek help; the medical service was offered to them. Some appreciated its importance, the others treated it with relative indifference. The atmosphere would be quite different if the mother had sought the interview with concern, as happens in medical practice. We feel that our position at the Lady Gowrie Centre now is such that the majority of mothers seek our advice and help with their problems, and as a consequence the relationship between mother and doctor is similar to that in medical practice.

The order in which the symptoms appeared in the study at the Lady Gowrie Centre is interesting. The majority of the children who became disturbed started off with abnormal signs in the emotional area; these were followed by the appearance of signs in the psychosomatic group, and disturbances of physical growth and development and posture came later. It will be recalled that of the 15 children with one area involved, nine were affected emotionally. A study of the history of the three children whose only symptom was enuresis suggests that this may have been due to the depth of their sleep.

The arrangement of the data in Table III calls for further comment. The majority of the mothers of those children who either were free of signs in the four areas studied or who had signs in one area only, were placed in the first and second categories. This suggests that these children came from homes where the personality of the mother and the relative freedom from prolonged physical or emotional burdens allowed the mothers to give the children the necessary support as they faced each new situation. In other words, in the terms of this symposium these children were subjected to a minimal number of stressful situations. In contrast, all the mothers of the children with signs and symptoms in three and four areas, and the mothers of three of the four children with speech defects, were placed in the third, fourth and fifth categories. These mothers were either poorly integrated, some because of defective relationships with their own mothers, or greatly disturbed emotionally because of their own problems. The mother of one child in this group had died, and several others had deserted their children. The children for these various reasons had probably been deprived of a reasonable degree of affection, had not been given support in their developmental processes, and probably actually had developed a considerable degree of anxiety through contagion from their mothers. In the terms of this symposium these children might be regarded as living in homes where they experienced a large number of stressful situations.

The figures in Table III suggest that as the home situation deteriorates and less and less support is given to the child, anxiety is engendered. This leads to the development of stress or tension within the child which it cannot adequately handle. Our studies suggest that this begins to manifest itself firstly in primary habit disturbances, then in the child's relationships with other people, and later in his facial expression. Before the last feature has developed to any extent, signs in the psychosomatic area may appear along with an intensification of the emotional disturbance, such as pronounced restlessness. It is at this stage that prolonged pallor and repeated dark rings under the eyes appear. Only later is physical growth affected.

The Commonwealth-wide posture study conducted in the late 1940's (Commonwealth Department of Health, 1950) showed that a definite relationship existed between "family management" and posture. The term "family management" in that study included the quality of the mother-child relationship. It is interesting to note in this study that, except for two children whose only defect was poor posture in the group with one area involved, deterioration in posture appeared to occur after psychosomatic signs of disturbance had appeared. In other words, like interference with physical development, poor posture was a late manifestation and seemed to occur in general in children from the more disturbed homes.

Summary.

1. The physical, psychosomatic and emotional health and the posture of 78 children, aged three to five years, who had been studied for periods ranging from six months to two years, are discussed.

2. The home environment of each of these children was studied, and an attempt made to classify the emotional stability and mothercraft qualities of the mother of each child.

3. The children were classified according to the number of areas in which they were rated unsatisfactory, according to certain specified criteria. The rating of each child was correlated with the classification of the mother.

4. It was found that the children without abnormal signs in any area and those with signs in one area came from homes with the minimal number of stressful situations. In contrast, all the mothers of the children with abnormal signs in three and four areas were classified as poorly integrated or greatly emotionally disturbed over a long period, or they had died or deserted their children. These children were regarded as living in homes where they experienced a number of stressful situations.

Acknowledgements.

My thanks are due to Dr. G. Scott, my associate at the Institute of Child Health, for valuable assistance in some stages of this study; to Miss I. Terry (the director), Mrs. M. White (the nurse), and the other members of the staff of the Lady Gowrie Child Centre, for their patient and cheerful cooperation throughout the whole study; to Dr. R. J. Walsh, of the New South Wales Red Cross Blood Bank, for his assistance with the hæmoglobin determinations; and to the directors of the Sydney Day Nurseries where the subsidiary studies were made.

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SKIN-GRAFTED ILEOSTOMY STOMA.

By E. S. R. HUGHES,
Melbourne.

A MAJOR ADVANCE in the treatment of ulcerative colitis has been the improvement in the welfare of the patient who has an ileostomy stoma. This has been achieved by the knowledge that complete rehabilitation and return to normal life is the rule; by the availability of neat, well-made ileostomy bags; and by the technical improvements in the construction of the ileostomy.

When speed of execution of operation was an apparently important matter, the ileum was brought to the surface in such a way that an inch or more was left projecting above the level of the abdominal wall. In such cases a ring of granulation tissue formed and stenosis of the ileostomy

opening was inevitable. If the mucosa of the ileum is sutured to the skin, this is avoided, but unfortunately this will produce some difficulties in management unless adherent bags are available from the time of operation. A further procedure, which has been advocated, entails wrapping a sheet of free skin, of split thickness, around the projecting ileum. This should minimize the fibrosis around the ileostomy and at the same time permit the construction of an ileostomy stoma which projects satisfactorily above the surface of the abdominal wall. The patient is thus able to wear a non-adherent bag, which is cheaper and more easily obtainable than the adhesive bag.

This method was used by the writer in the construction of 15 ileostomies. The skin graft was not applied until the operation had otherwise been completed. The operation always entailed a colectomy, and sometimes a proctocolectomy. The extra fifteen or twenty minutes did not have any ill effects on the patients.

Technique of Skin-Grafting the Ileostomy.

The ileostomy in this series has been constructed through a transverse incision below and to the right of the umbilicus. Two inches of ileum are withdrawn, and a rubber tube, half to three-quarters of an inch in diameter, is inserted into the orifice and tied in firmly (Figure I).

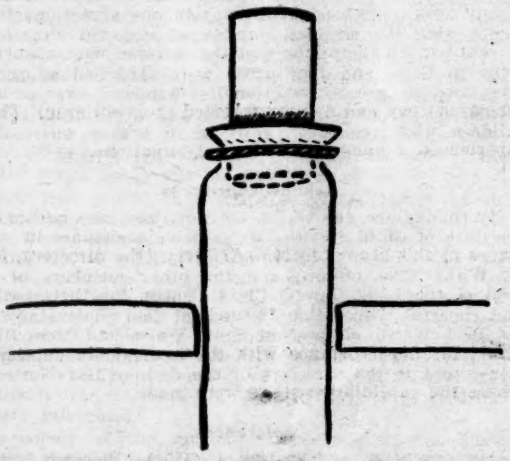

FIGURE I.

The ileostomy projects two inches above the level of the skin and a tube is tied in to the end.

After the main abdominal wound has been closed and dressings have been applied, the rubber tube attached to the ileum is tied to a wire frame, so that the projecting tube and ileum are held vertically in a fixed position. A glass rod connects the distal end of the rubber tube with a bottle. A sheet of skin is cut from the anterior surface of the thigh and wrapped around the projecting ileum, so that the under-surface of the piece of skin is resting on the serosa of the ileum. The sheet extends from the apex to the base (Figures II and III). The ends of the sheet of skin are approximated with interrupted sutures, whilst the sides are sutured around the apex and base respectively, although the latter stitches do not penetrate the serosa of the ileum lest a fistula should result. The graft is given further support by dressings built in pyramid fashion around the ileostomy. The dressings are left undisturbed for six or seven days; on their removal the tube is discarded and an ileostomy bag is applied. No further dressings are necessary.

The apex of the ileostomy can be trimmed away and the mucosa of the ileum sutured to the skin-grafted surface.

Results of Skin-Grafting to the Ileostomy.

There has been a satisfactory "take" of the graft in each case. The immediate result has been excellent and has been associated with a flexible ileostomy which projects into a bag. There is no unpleasant mess and no excoriation of the skin. In none of these cases has there been any prolapse of the ileostomy. In one case a fistula formed, which led from an external opening one inch below the ileostomy into the ileum, at the base of the ileostomy.

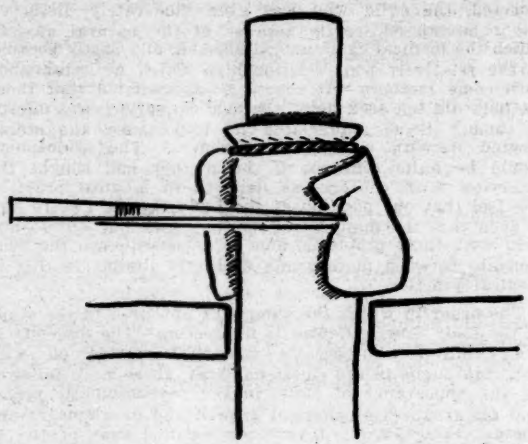

FIGURE II.

A sheet of split thickness skin is wrapped around the projecting stoma.

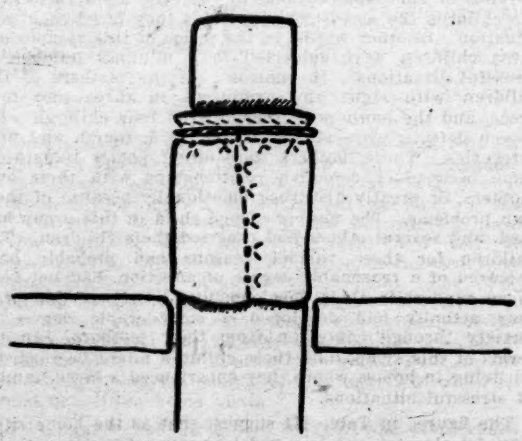

FIGURE III.

The skin graft is sutured in position.

The ileostomy did not remain supple in this series, but assumed an erect and almost rigid position. Although it continued to project above the surface of the skin, the length appeared to decrease over a period of several months.

In 10 of the 15 cases in this series stenosis of the ileostomy has developed, and this has constituted a disappointment in the end results.

The Cause of Ileostomy Stenosis after Skin-Grafting of the Ileostomy.

In this series the stenosis which developed in the ileostomy did so either at the apex or at the base, or at both sites (Figure IV).

Stenosis at the Apex of the Ileostomy.

At the distal end of the projecting ileum there is a gap between the mucosa and the skin graft, which will close by granulation, with consequent contraction of a fibrous tissue ring. A stenosis at this site should be foreseen and prevented by trimming the ileostomy on about the seventh day after the operation. The tip of the ileostomy is removed and mucosa is sutured to the skin graft.

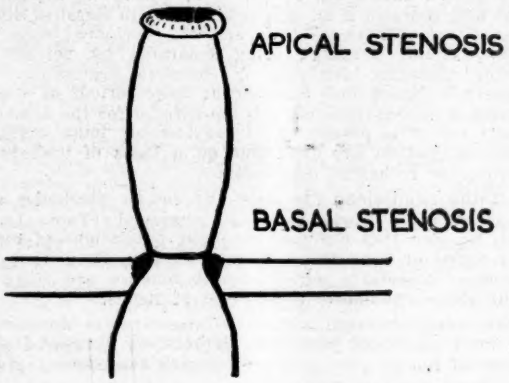

FIGURE IV.
The sites of stenosis in a skin-grafted ileostomy.

Stenosis at the Base of the Ileostomy.

At the base of the ileostomy it is difficult to prevent a ring of granulation tissue from forming, because it is undesirable to place any sutures through the serosa of the ileum. The ileum falls away from the edge of the skin and the gap is closed by granulation tissue, with the subsequent formation of a tight ring of fibrous tissue.

Discussion.

Skin grafting of the ileostomy stoma was first suggested by Dragstedt and his associates (1941) and has been advocated by others (Sanders, 1948; Black and Sholl, 1954; Rogers, Bargen and Black, 1954). The procedure has been given a trial in 15 cases by the writer, and certain of the favourable features emphasized by the American writers have been confirmed. In the first week or two after the operation the ileostomy has proved particularly easy to manage; no adhesive bags are required and excoriation of the skin is absent. Rogers, Bargen and Black (1954) have noted that prolapse of the ileostomy does not occur in the skin-grafted stomata.

The high incidence of ileostomy stenosis is disturbing. This is all the more disappointing because the graft was initially designed to prevent this happening; so much so that when the graft shows a complete "take" the insidious development of ileostomy stenosis may be overlooked. Clinical evidence of stenosis is apparent about two to six weeks after operation. Although the ileostomy continues to work, and often in considerable volume, the fæcal discharge is fluid. Abdominal colic may lead the surgeon to suspect peritoneal adhesions and to advise laparotomy, as did the writer in one of his cases. Failure to gain in strength and persistent fluid ileostomy stools may lead to the diagnosis of ileal involvement by the disease or even to psychosomatic disorders. If the surgeon elects to graft skin onto the ileostomy he must be alert after ten to fourteen days for ileostomy stenosis, and must not hesitate to excise or incise the stoma, despite his reluctance to mutilate an apparently effective skin graft.

If their continued use indicates that adhesive bags have no ill effects on the patient's skin, and if they are available at the time of operation, the most effective way of constructing the permanent ileostomy entails simple suture of the mucosa to skin edge (Brooke, 1952). If adhesive bags are not available, or if they prove unsatisfactory, a skin-grafted ileostomy can be recommended, at least as a temporary expedient, until the patient is ambulatory. In the writer's opinion, the incidence of stenosis is too high to justify its continued use as a procedure of election. The writer has abandoned the older method of leaving the ileum projecting without other cover (Counsell and Lockhart-Mummery, 1954), and he has had no experience with the skin-flap ileostomies advocated by Monroe and Olwin (1949) and by Wells (1952).

Summary.

1. In a series of 15 cases a skin graft has been applied to the surface of the projecting ileum in the course of construction of an ileostomy for ulcerative colitis.

2. In each case there has been a satisfactory "take" of the graft, and the immediate result of this technique has been gratifying. The more expensive and less easily obtained adherent bags are unnecessary, and excoriation of the skin is avoided.

3. The absence of ileostomy prolapse in this series conforms with the experience of other surgeons who have used this technique. But this in turn may be due in part to the high incidence of ileostomy stenosis.

4. The large number of patients who develop ileostomy stenosis is disappointing, and the incidence after skin-grafting is high, despite the fact that this procedure was designed to prevent it. For this reason the procedure has limited value, but is indicated if adhesive bags are not available or if the ileostomy has to be refashioned on account of prolapse.

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ALCOHOLISM—A COMMUNITY RESPONSIBILITY.

By J. F. J. CADE,

Psychiatrist Superintendent, Receiving House, Royal Park, Victoria.

ALCOHOLISM is by far the commonest ætiological agent in recent admissions of male patients to mental hospitals in Victoria. It is the one major known causative factor in mental ill-health. It would probably be true to state that it is responsible for a higher mortality and morbidity than tuberculosis and poliomyelitis; yet community effort directed to the prevention and treatment of alcoholism has been negligible. Treatment at the present time is superficial, inadequate, and inevitably often unsuccessful.

It is neither preventive nor curative, purely palliative. The "cure" of the majority of patients lasts just as long as their in-patient sojourn.

The two major obstacles to successful treatment are, first, the refusal of many to stay more than the few days or week or two required for recovery from their most acute symptoms, and secondly, acute shortage of accommodation even if patients desire to stay for the length of time necessary for an adequate rehabilitative programme.

When the aetiology of alcoholism is investigated, it becomes evident that it is multi-factorial, and preventive measures must be at a community level. The psychiatrist must play his part, but it is a minor one in the total effort required for the control of this major cause of mental ill-health.

The Magnitude of the Problem.

Alcoholism is responsible for 35% to 40% of admissions of male subjects to the Receiving House, Royal Park, which admits the bulk of recent psychiatric patients in Victoria (Table I). Of the total admissions of female patients, about 8% are due to alcoholism. The figures include cases of acute or chronic alcoholism, cases of alcoholic psychosis, and other psychotic or neurotic reactions in which alcoholism has been a prominent symptom.

Table I.

	Total Admissions to Royal Park.		Alcoholic Admissions to Royal Park.		Depressive Admissions to Royal Park.	
	Males.	Females.	Males.	Females.	Males.	Females.
1955—						
January ..	109	154	39	13	12	41
February ..	99	108	31	11	12	36
March ..	114	128	36	8	19	44
April	109	144	44	14	7	37
May	110	107	40	9	18	36

Comparing the percentage of alcoholic admissions to Royal Park during a four months' period in 1955 with a four months' period in 1952, one finds that the alcoholic admissions of male subjects have jumped from 22·7% of the total admissions of males in 1952 to 34·8% in 1955. One could too easily conclude that there has been an alarming increase in male alcoholism in a few short years. (The corresponding figures for admissions of female subjects are 9·6% for 1952 and 8·6% for 1955. That is, there has been little change.) But if we compare the admission percentage for female depressives for the same two periods, we find that there has been a similar increase —that is, from 21·5% in 1952 to 31·3% for 1955. The chief, if not whole, explanation in both cases is that there has been a considerable increase in the number of patients who voluntarily seek in-patient psychiatric treatment. The numbers have almost doubled in the last year alone, and the trend has been most evident amongst male alcoholics and female depressives. It is therefore not possible to conclude from these figures whether there has been a real increase in the last few years. But whether or not alcoholism is increasing, the present figures clearly indicate an alarming frequency of illness due to this cause.

Causes.

Effective remedial or preventive action can be planned only on the basis of an accurate knowledge of causative factors. It has been stated that there is no common personality pattern or problem underlying alcoholism. This is not altogether correct. Certainly there are a large number of circumstances involved if one includes excuses as well as causes; but there is no doubt that when one sees a never-ending procession of alcoholics, a relatively small number of personality problems and deficits emerge as responsible for the vast majority of cases. They can be divided into two broad categories, personal and social.

Personal Factors.

1. One of the commonest personal factors is unpleasant tension. This, in turn, is usually due either to chronic insecurity and anxiety or to feelings of social inadequacy. Too often the female alcoholic will say that she cannot deal with any tension-producing situation without getting "butterflies in the stomach", unless she first fortifies herself with a couple of brandies. It seems to be the young man who complains more often of feelings of inadequacy and shyness in social activities. Only when he has had some alcohol can he enjoy social pleasures that are otherwise denied him by his own inhibitions. As time goes on, dependence on alcohol as a remover of inhibitions, anxieties and tensions becomes more and more a deeply ingrained pattern of behaviour.

2. Depression, whether reactive or endogenous, is a well-known underlying factor. It is difficult to determine just how common it is. The relationship to classical dipsomania is well enough understood, periodic bouts of uncontrollable drinking being separated by periods of either moderate drinking or complete abstinence. If alcohol is denied such a person at these periods of urgent desire, a depressive episode is substituted for the alcoholic bout; but it is probable that considerably more cases of male alcoholism are explicable on a basis of underlying chronic or recurrent depression.

If the admissions for male and female alcoholics and depressives to Royal Park are compared (Table I), it will be seen that although alcoholic admissions of males are three or four times more numerous than those of females, depressive admissions of females are three or four times commoner than those of males.

The total combined admission rates—that is, admissions of male alcoholics *plus* male depressives, compared with those of female alcoholics *plus* female depressives—are of the same order of magnitude.

The alcoholic admissions include the various categories mentioned above. The depressives are all those in whom depression is a prominent symptom, regardless of diagnostic group, although in fact most of them are sufferers from endogenous depression.

Where both alcoholism and depression were present in the one patient, the case has been placed in the alcoholic group only.

Now, a considerable number of male alcoholics are also deeply depressed, not infrequently to a suicidal degree. Are these men depressed because they are alcoholic, or are they alcoholic because they are depressed? Does the male depressive drown his sorrow in drink, whilst the poor woman, forbidden by custom to do so, seeks relief in electro-convulsive therapy? There is certainly a reciprocal relationship between depression and alcoholism—each aggravates the other. If an appreciable amount of male alcoholism is precipitated by underlying depression, then one would expect that where the incidence of alcoholism is low—for example, as in Britain at the present time—the proportion of admissions of male depressives may be higher. On the other hand, if alcoholism and depression share certain precipitating factors, then it could be expected that where alcoholism is infrequent, depressive reactions will also be less common.

3. There are a number of patients who seem to have no particular difficulties or tensions, in whom the habit can be ascribed only to plain self-indulgence, a habit of intemperance—of which more will be said when social aspects are dealt with.

4. There are a number of less common causes. In some excessive drinking seems to be a compulsive act, perhaps analogous to chain smoking. There is an "all or none" character about it. Such people either smoke or drink to excess or not at all. In others, a mild or early organic dementia of any origin, with its lessening of responsibility and judgement, may be the cause. Intemperance occurring for the first time in a previously well adjusted adult indicates the need for a thorough neurological and

psychiatric examination. The sufferer from a schizophrenic hallucinosis occasionally seeks to banish the distressing symptom with alcohol, but succeeds, like the depressive, only in aggravating it. Mixed schizophrenic and alcoholic psychoses are not rare. The epileptic sometimes flies to alcohol, and it is a disastrous combination. The alcoholism increases the convulsive tendency. Fits are fairly common in chronic alcoholics, and an otherwise well controlled epileptic may have a seizure only when under the influence of alcohol.

5. Finally, by far the commonest and most important of personal causes, from the point of view of both prevention and rehabilitation, is the poverty of interests that so many patients exhibit. In many cases either the subjects have never had a sufficient variety of interests, or interests have contracted into invisibility as alcohol has occupied more and more of their time. They have no creative interests at all, and their recreative activities are two—drinking and gambling. This seems to be the commonest personality deficit. These people know not what to do with their leisure hours. They have no cultural interests, no hobbies. Separated from their sterile spare-time activities they are utterly bored. A large number of male patients are separated from their wives. Their wives have been no longer able to tolerate the misery of a drunken, irritable, neglectful or brutal husband. They have either ordered their dissipated spouse forth or gone themselves. This has furnished him with the ready excuse of loneliness for further drinking. His life has become even more empty. Thus empty lives are both a cause and a result of alcoholism. It is evident that most alcoholics use alcohol to escape from life's problems or as an antidote to boredom. It is a relaxant, a neutralizer of worries and tensions, a remover of inhibitions. The prime personal factors involved are boredom, unhappiness, self-indulgence, stupidity and compulsiveness.

Social Factors.

It is more difficult to assess the relative importance of various social factors. Probably the most obvious factor in this country is the sex difference. The male is preponderantly the alcoholic. Male drinking is more extensive, more intensive and more socially tolerated.

Ease of access to alcoholic beverages has often been regarded as important. But it is extremely doubtful whether extended or limited drinking hours have much effect. In Britain, drinking hours and licensing are much more generous than in Australia, yet alcoholism is far less. It is possible that this is more than counterbalanced by the higher tax on alcohol and the lower alcohol content of beers.

Certain occupations are notoriously associated with heavy drinking. Amongst wharf-labourers, men engaged in the brewing and distribution of liquor, racing and gambling enthusiasts, and commercial travellers, alcoholism has been regarded almost as an occupational hazard. But there is not an undue proportion of people in these trades amongst our alcoholic in-patient population. Occupation does not seem to be a factor of much importance.

Economic circumstances may play some part in Australia at the present time. One is repeatedly amazed at the amount of money that young unskilled, but well paid, manual workers spend on liquor, usually beer.

However, apart from sex difference, it is probable that the other social factors mentioned are of relatively minor importance. Much more significant are the drinking habits of the people—what may be called the custom of sobriety or of intemperance. There is no doubt that intemperance is an infectious social disease.

Prevention, Treatment and Rehabilitation.

Preventive or therapeutic measures may be divided into coercive and educative. Amongst coercive measures may be listed limitation of drinking hours, "dry" zones, increasing taxation on alcohol and lowering of the alcohol content of beverages. They all appear to be singularly futile —futile because they are superficial and take no heed of the real reasons for intemperance.

People who want to drink will drink. Irksome restrictions only add to the zest for eluding them, as well as encouraging all sorts of illegalities and rackets.

Treatment and rehabilitation of the subjects of established chronic or recurrent alcoholism are, as has been mentioned earlier, hopelessly inadequate. It is with such patients that coercion may be necessary, either because they refuse to recognize their subjection or because they have drunk themselves into a psychosis. The necessary coercive measure in such cases is a detention order under an *Inebriates Act*. The committal must be for a minimum period of six months. The habit of sobriety has not a chance to develop under at least some months of enforced abstinence.

In Victoria at the present time the odd situation exists of an *Inebriates Act*, but no inebriates' institution to which the patient may be sent after committal. It is an urgent necessity that such a unit be provided. It should be completely separate from a mental hospital, but organized as part of the State psychiatric service and staffed by experienced psychiatrists. Such a hospital should be run on group therapeutic principles and modelled on the Belmont Industrial Neurosis Unit. There is no reason why it should not embrace wider functions and accept for treatment patients suffering from other neurotic reactions or personality disorders uncomplicated by alcoholism. Patients could be referred to such a unit either directly, as under the present Act, or from a psychiatric hospital on a medical recommendation to a visiting magistrate.

There would be a twofold therapeutic aim: first, the treatment of personality difficulties contributing to the addiction; and secondly, a thorough rehabilitative programme, the object of which would be the arousal of deep and abiding creative and re-creative interests to fill the void of empty lives. This means in practice a highly developed occupational therapy department with a wide variety of craft activities, adequate trade workshops, outdoor occupations, and a full programme of social participation.

There is no doubt of the value of wise spiritual counsellors in such an organization. This is an aspect of recovery which alcoholics themselves only too keenly recognize. Full-time chaplains would be necessary in a hospital of any size, and a useful corrective to the modern psychiatric emphasis on self-knowledge rather than on self-discipline as a therapeutic aim, and to the view that discipline in the community stems from imposed social pressures rather than that it arises from any deep convictions of social justice and obligation.

Alcoholics Anonymous is one of the most important present aids in the alcoholic's struggle for sobriety. The mutual understanding, tolerance and help that are extended so generously from one member to the other are of enormous value both to those who give and to those who receive. Although strictly non-sectarian, Alcoholics Anonymous places great value on the necessity for seeking spiritual aid according to individual beliefs. But Alcoholics Anonymous does not go far enough, as has been implied in the discussion of the functions of an inebriates' hospital.

Prevention.

Prevention is the key to the whole problem. It lies almost wholly outside the sphere of the clinical psychiatrist and very much in the hands of those who are responsible for training the nation's youth—parents and teachers. Unfortunately, it is impracticable in most cases to reeducate unsatisfactory parents; but it should not be impossible to reorientate the educational goals of our schools. People in Australia spend more time in leisure than in earning a living. So, unless education for leisure is made as important a part of the teaching programme as education for work, then education is a failure. Children must be taught social competence and social responsibility. Cultural, social and craft activities that will remain as strong and per-

manent interests of adult life and make leisure meaningful should be an integral part of every primary and secondary school curriculum.

The greatest safeguard against alcoholism is a full life, with a deep sense of the dignity of work, absorbing leisure interests, and positive social roles.

Reports of Cases.

THE ELLIS-CREVELD SYNDROME: REPORT OF A CASE.[1]

By ELIZABETH K. TURNER, M.D.,
Melbourne.

THE Ellis-Creveld syndrome is characterized by ectodermal dysplasia, polydactyly, chondrodysplasia and congenital heart disease.

The first case was described by McIntosh in 1933, three further cases were described by Ellis and Van Creveld in 1940, and these authors suggested the name chondro-

FIGURE I.

Post-mortem photograph of infant showing shortening of limbs, polydactyly and bilateral *talipes equino-varus*.

ectodermal dysplasia for the syndrome; in 1952 Caffey reported the fourth and fifth complete cases, and in March, 1955, Weiss and Crosett reported a sixth case.

The diagnosis can be made on inspection of the patient, who has shortening of the legs and arms, especially below the knees and elbows, and short stubby hands with polydactyly and sometimes syndactyly.

[1] Presented at a meeting of the Pædiatric Society of Victoria on June 8, 1955.

There is hypoplasia of the nails and sometimes hair and dental hypoplasia. The intelligence has been normal in all cases that have been reported, and in all except our own case and one reported by Caffey, in which the patient died from heart failure at the age of fourteen months, the patients have survived into adult life.

Clinical Record.

At the Queen Victoria Memorial Hospital, Melbourne, in April, 1955, after an uneventful pregnancy, a full-term

FIGURE II.

X-ray photograph of lower extremities, showing characteristic shortening of long bones, especially the tibia, and acetabular hypoplasia.

child was delivered normally to normal parents. The father was a migrant from Italy, and as far as could be ascertained had a normal family history. The mother was an Australian, and there was no history of skeletal defects or abnormalities in her family. The parents were in no way related, although consanguinity has been present in the parents of the affected person in two others of the reported cases; thus it has been considered that this defect is due to a recessive gene, not sex-linked, as the sex distribution of the cases is now four in female and three in male subjects.

The infant weighed six pounds one ounce at birth, and shortening of the limbs was immediately noted. A sixth digit was present on both hands and feet; also there was a bilateral *talipes equino-varus*, a feature exhibited by the child in the case reported by Weiss and Crosett (1955).

The thoracic cage was grossly undersized, and expansion was limited; so that rapid dyspnœa was present throughout this infant's life, as well as a marked degree of cyanosis, which became less after the administration of oxygen. The mandible and maxilla were reduced in size, and the dental ridges were hypoplastic and furrowed; no teeth were present. The finger nails were spoon-shaped, rudimentary and almost completely covered by the skin of

the digits, and there was a diffuse marbled veining in the skin of the limbs.

A loud systolic bruit was audible over the precordium, and the liver was palpable at least two fingers' breadth below the right costal margin. The spleen was also easily palpable; this phenomenon was considered to be due to visceroptosis because of the restricted size of the thorax, rather than to hepatosplenomegaly, although undoubtedly congestion of these organs was present, especially in the terminal phases.

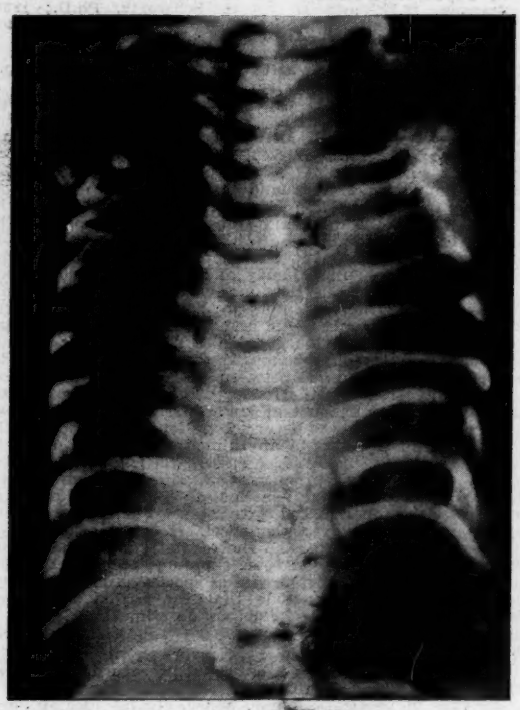

FIGURE III.

Radiograph of infant's thorax to demonstrate narrowing of thoracic cage, abnormality of the clavicles and enlargement of the cardiac shadow.

The diagnosis in this case was made by the radiologist, Dr. Joan Spong, who demonstrated the characteristic radiological features of the Ellis-Creveld syndrome. These consist of shortening of the tubular bones, especially the tibia and fibula (Figures II and IV); the fibula is not disproportionately long in relation to the tibia, as is the case in achondroplasia; also in all cases hypoplasia and ectopia of the proximal tibial ossification centres are present. Characteristic peaking of the proximal tibial and humeral shafts is present. In this case and in the case reported by Weiss and Crosett acetabular hypoplasia and bilateral *talipes equino-varus* are also apparent.

The radius and ulna and the tubular bones of the hands and feet are also shortened, and in all reported cases there has been a massive fusion of the carpal bones, which appear like the *os centrale* of the carpus of the lower vertebrates. No ossification was demonstrable in the carpus of this infant.

The supernumerary sixth digits are visible in the photographs, as is also fusion of the metacarpals. The spine is normal, but hypoplasia of the thoracic cage and abnormality of the clavicle are noted.

This infant survived with difficulty until the tenth day of life, and then succumbed as the result of cardiac failure.

At autopsy, as well as the features described above, the heart was triangular in shape (rather like an isosceles triangle) and enlarged, and the left ventricle lay posterior to the right ventricle. Internally, triloculation was present, a single auricle serving both ventricles; the vessels entering and leaving the heart were normal. The lungs were hypoplastic and exhibited some hypostatic bronchopneumonia; the right lung was not segmented.

FIGURE IV.

Radiograph of the infant's upper extremities, showing shortening and thickening of the radius and humerus, with characteristic "peaking" of the humerus; a sixth digit is seen on both hands with fusion of the metacarpals. The ossification centre for the carpus was not present.

Summary.

A case of Ellis-Creveld syndrome is reported in an infant who lived ten days only.

Six other cases of this syndrome have been reported.

The characteristics include ectodermal dysplasia, chondrodysplasia with shortening of the tubular bones of the limbs, polydactyly and congenital heart disease.

The diagnosis can be made on inspection of the patient, and is confirmed by the radiological appearances of the skeleton.

References.

CAFFEY, A. B. (1950), "Pediatric X-ray Diagnosis", Second Edition, Year Book Publishers, Chicago, 643.

ELLIS, R. W. B., and VAN CREVELD, S. (1940), "Syndrome Characterized by Ectodermal Dysplasia, Polydactyly, Chondrodysplasia and Congenital Morbus Cordis: Report of Three Cases", *Arch. Dis. Childhood*, 15: 65.

MCINTOSH, R. (1933), in Holt and Howland's "Diseases of Infancy and Childhood", Tenth Edition, New York, Appleton-Century Company, 362.

WEISS, H., and CROSETT, A. (1955), "Chondro-Ectodermal Dysplasia", *J. Pediat.*, 46: 268.

Reviews.

The Medical Annual: A Year Book of Treatment and Practitioners' Index. Edited by Sir Henry Tidy, K.B.E., M.A., M.D. (Oxon.), F.R.C.P., and R. Milnes Walker, M.S. (Lond.), F.R.C.S.; Seventy-Third Year; 1955. Bristol: John Wright and Sons, Limited. 8½" x 5½", pp. 624, with many illustrations. Price:

"THE MEDICAL ANNUAL" needs no introduction to most medical practitioners. Its comprehensive survey of each year's developments in the world of clinical medicine have made it the constant companion of those who wish to keep up with their medicine and surgery and yet have no time to read widely. Under the joint editorship of Sir Henry Tidy and R. Milnes Walker, 47 contributors have dealt with their own special subjects. In most cases the article is a critical summary of related material published during the current year, but a more comprehensive review is made of certain subjects—for example, training for athletics, boric acid poisoning, epidemic hæmorrhagic fever, the selection of cases of congenital heart disease for surgical treatment, and physical agents in the treatment of chronically ill patients. Interesting subjects not usually found in annual review volumes, but well established in "The Medical Annual", include legal decisions and legislation, veterinary medicine in relation to human medicine and vital statistics. Additional features are the "Practitioner's Index" of recent pharmaceutical and dietetic preparations, medical and surgical appliances *et cetera*, and the classified list of books of the year. "The Medical Annual" is still as sound and comprehensive a publication in its own field as could be desired.

History of the Second World War: United Kingdom Medical Series. Editor-in-Chief, Sir Arthur S. MacNalty, K.C.B., M.A., M.D., F.R.C.P., F.R.C.S. "The Army Medical Services: Administration", edited by F A. E. Crew, F.R.S.; Volume II; 1955. London: Her Majesty's Stationery Office. 9½" x 6", pp. 588, with 45 illustrations. Price: 65s.

VOLUME I of this series dealt with the major problems of the Army Medical Services and the broad policy underlying their solution. In this volume there is an account of the organizational development of some of the components of the services with an appreciation of the value of their activities. Whilst it may have been true in earlier days that "soldiers have rarely won wars, they more often mop up after the barrage of epidemics" (Hans Zinsser, "Rats, Lice and History") and that infectious diseases have decided more campaigns than all the inspectors-general of history, the participants in the recent war had the knowledge and ability to keep most of these diseases in check. However, the ultimate issue was in no small measure determined by the competence and efficiency with which this knowledge was applied, particularly in the utilization of new therapeutic armamentaria. In the East it was necessary to control the malaria parasite before the Japanese could be defeated, and new measures were required for the prevention of scrub typhus (in both of which endeavours the assistance of the Australian forces is freely acknowledged). These tasks helped to emphasize the importance of the Army Hygiene Service, with which a large section of this volume is concerned. The scope of this service has been greatly extended (in the new Directorate of Army Health) since those earlier days when it was (popularly at least) associated mainly with environmental hygiene, and the outstanding success attained is a tribute to the flexibility of the service and the wealth of available scientific resources.

The problems resulting from the enlistment of females in the army are discussed from the point of view both of the Army Nursing Service and the Auxiliary Territorial Service. Accommodation, hospital treatment, and clothing, particularly footwear, provided problems which were not always easily solved, but gynæcological difficulties seem to have occasioned surprisingly little concern.

The decision to establish an Army Transfusion Service was amply justified. It called for organizing ability of a high order, for, just as in Australia, all manner of unprecedented administrative and technical problems presented themselves. The successful solution of these was a notable achievement, and resuscitation and transfusion developed as a major life-saving measure and a valued contribution to ultimate victory.

The Army Pathology, Radiological and Ophthalmic Services are discussed, each with its own peculiar problems, and the development of the Army Dental Service is traced in some detail.

An important chapter discusses the difficulties of the Army Psychiatric Service. The psychiatric aspects of morale, discipline, and training are outlined and mental defects are indicated as a frequent cause of military delinquency. The role of the psychiatrist in personnel selection and particularly in selection of officer cadets is discussed at length. Apparently there was frequent difference of opinion on this subject between the psychiatrists and the Adjutant-General's branch, and it is possible that the former pushed their opinions too strongly, and that their standards were too high; but the discussion is particularly valuable for all those concerned in enlistment or allocation of troops for any of the services.

The Mental Hospital: A Study of Institutional Participation in Psychiatric Illness and Treatment. By Alfred H. Stanton, M.D., and Morris S. Schwartz, Ph.D.; 1954. London: Tavistock Publications, Limited. 9" x 6", pp. 511. Price: 35s.

THIS is the story of an attempt to make more individual the care of patients in a private hospital of sixty beds. A team of business efficiency experts had advised the discharge of non-paying patients with a view to reducing the maintenance costs of $850 per month per bed. The professional staff of psychiatrists, nurses and aides, dietitian and psychologist numbered 116, with an additional 49 office workers, domestics and ground staff. The treatment was psychotherapeutic at $20 a session, with sedation and the continuous bath as ancillary physical treatments. The majority of the patients were schizophrenics, most of whom had been under treatment elsewhere. The authors found the system of reporting clumsy and inefficient, and it took them a year to find out how many cigarettes the patients were smoking. Their attempts to discover how far it was justified to make concessions and departures from routine in the interest of individual patients revealed a poor state of morale and discipline amongst the staff. The lengthy transcript of a conference between psychiatrists and nurses on this subject reminds the reader of a Hollywood presentation of an American court of law. Mrs. B. (charge nurse) says, in reference to a disturbed patient who wanted the light on: "Hell, I can't do anything but turn it on." The problem remained unsolved. There was frequent conflict between the psychotherapeutic and administrative psychiatrists; Dr. L. was "highly articulate and outspoken", and certain staff members sided with him. There was conflict between the nurses over the special feeding of a patient with œsophageal stenosis, and there was no agreement until the patient's condition had been explained to *eight different members* (authors' italics). In a special study of incontinence the authors conclude that the patient who feels neglected or out of place tends to do something which is "out of-place".

This report of a three-year research written in all sincerity and not intended as sensational literature for popular consumption reveals the evils of bad psychology applied at the expense of practical common sense. In the closing paragraph the authors, as their only constructive suggestion, stress the need for inquiring into the best type of institution to be taken as a model. They have at least described another kind. The book will be read with some amusement and still more amazement.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Administrative Medicine: Transactions of the Third Conference, October 6, 7 and 8, 1954, Princeton, New Jersey", edited by George S. Stevenson, M.D.; 1955. New York: Sponsored by The Josiah Macy, Jr. Foundation. 9" x 6", pp. 172. Price: $3.00.

Among the subjects discussed are: the special characteristics of medical administration which make them different from those of other fields of administration, the distinctive characteristics and educational requirements of medical administration, the principles and concepts of business administration as applied to medical administration and so on.

"Operative Technic in General Surgery", edited by Warren H. Cole, M.D., F.A.C.S.; Second Edition; 1955. New York: Appleton-Century-Crofts, Incorporated. 9½" x 6½", pp. 997, with many illustrations. Price: $20.00.

There are 36 contributors to this volume and 26 chapters of which the editor has written two.

The Medical Journal of Australia

SATURDAY, MARCH 3, 1956.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

A SURGEON'S ADDRESS.

CUSTOM demands that presidents of medical and other scientific bodies shall, either when entering upon or when relinquishing office, deliver an address to assembled members. As we all know from past experience, the address may be an infliction or a joy to the listeners. In either case it is probably not looked forward to with much pleasure by the president. His chief difficulty is the choice of a subject. His zeal for his society and his feelings of responsibility to it make him feel that he ought to say something about it which will increase the zeal of, and strengthen the feelings of responsibility among, its members. And he knows that there are certain things which cannot be said too often. It is something like the lover and his lass; he has to tell her over and over again that he loves her. For our present purposes it does not matter whether he does this because he wants to, or because she, woman-like, wishes to hear it; the point is that he wants her to believe what he says. There is a difference, however; the lover "keeps on saying" from motives of self-interest, the president for reasons concerned with the welfare of many. In a recent presidential address[1] to the Pacific Coast Surgical Association L. R. Chandler, of San Francisco, said many things, most of which had been said before, but he said them very well. He referred briefly to the life-history of his Association, which has a duration of approximately thirty years, and as might be expected, to the expansion of scientific knowledge and to the accumulation of factual information; he also declared that research in medicine had been more productive than at any time in present-day history. He then discussed the changes that had taken place in the nation's economy and passed on to the question of hospital insurance and the provision of medical care on a prepaid voluntary basis. He stated that today at least 92,000,000 Americans have pre-paid hospital or health insurance or both on a voluntary basis in one form or other. This number is increasing year by year. Australian practitioners will recall that much of the history of the Blue Cross in the United States was described to them when Mr. W. S. McNary and Mr. E. C. Van Steenwyk visited Australia in 1953 at the invitation of the Federal Government. In addition the Government, Chandler adds, provides fairly comprehensive health care from tax funds to about 21 million "veterans", five million indigent, three million members of the armed forces, and some two million dependants of military personnel. This 31,000,000 "are eligible to receive medical and hospital care from tax funds through various departments of the government". The total of 123,000,000 whose medical care is received in the two ways mentioned is not inconsiderable. But certain fears entertained in Australia find their parallel in the United States. In California there is an *Unemployment Compensation Disability Act*. According to the latest amendment of this Act, all employees are required to pay 1% of their wages to a fund which provides compensation for unemployment due to non-industrial illnesses, and further provides the sum of ten dollars a day to the unemployed worker for a maximum period of twelve days spent in hospital. "Most students of tax-supported health insurance consider this trend very hazardous and one of the early steps up the ladder to complete health insurance, generally referred to as State Medicine." Chandler does not mention what steps, if any, are being taken to meet this long-range threat.

Another aspect discussed by Chandler has to do with medical education. He states that the availability of government funds for medical research and the premium awarded in many academic circles to research accomplishments have a tendency to separate medical investigation from medical care and teaching. He finds that many so-called investigators do little investigating, but spend much of their time planning new projects for research assistants and budget requests for new grants-in-aid. Much of the work is done by junior-grade members of the department or by technicians and technologists. The financing of medical schools and hospitals has also changed in recent years. In 1925 the annual cost of educating a medical student was $700; today, in 1955, it is more than $3000. In addition medical faculties have been given the responsibility for the education and training of medical personnel other than those who will graduate in medicine. During 1953-1954 American medical schools listed 27,789 undergraduate medical students and 59,430 others as their student bodies. Chandler states, and he is probably correct, that the medical schools in this way lose a good deal of their effectiveness for instruction in a learned profession. Chandler describes other ways in which the activities of medical faculties are diverted from teaching and research; he adds (a point made in this journal in regard to the appointment to a chair of medicine in an Australian medical school a year or two ago) that a professor of surgery who is responsible for the daily care of from twenty to forty private patients in a hospital "cannot do a very good job of training the next generation of

[1] *Am. J. Surg.*, August, 1955.

physicians". He insists that too much teaching at the medical school level is now done by last year's residents, or inexperienced beginners on the faculty, and not by the masters themselves. It is true that the teaching which sticks in the mind of the medical graduate is that which he receives during his student days at the hands of "the masters". It is also true that in criticisms of what takes place now some allowance has to be made for the increasing numbers of students and for the continually growing field of knowledge which has to be covered in the teaching of undergraduates. The conditions discussed in this part of his address by Chandler are a strong argument in favour of the appointment of a full-time dean of the faculty of medicine who could relieve the real teachers of many of the diverting interests mentioned.

Only one more aspect of Chandler's interesting and many-sided address will be mentioned. He states that superior medical education depends on what he calls the three M's: men, material with which to work, and money enough to make it possible. Here is a subject on which any thoughtful student of medicine could, or ought to be able to, write a convincing essay. Chandler believes, and there is no doubt that he is right, that the greatest of the three desiderata is men. "It is quality, not quantity, of personnel that counts." These words might well be the motto of every medical school. A grounding in the basic sciences is necessary, and a special plea should be entered for at least a working knowledge of the English language, if not of English literature; but over and above all is the need for high moral character—a quality which demands respect for, and practice of, not only the letter but the spirit of the Hippocratic Oath and of the Golden Rule. Let us never forget that character is something like a precious plant in a garden—it can be strengthened by what it feeds on, and it can be allowed to wither through neglect. And each of us is his own gardener.

Current Comment.

MEDICAL PRACTICE AND THE DUCHESS OF ORLEANS.

MEDICAL PRACTITIONERS are by no means strangers to adverse opinions of their skill in treatment. For all the large proportion of suffering humanity that in humble trust leans on the "beloved physician", there is always a sprinkling of persons of tougher fibre who appear to share Voltaire's view that "a physician is a person who pours drugs of which he knows little into a body of which he knows less". A notable representative of this category was the doughty Liselotte, Duchess of Orleans, mother of the Regent and Princess Palatine, one of the strangest members of the court of Louis XIV. R. Vaultier[1] presents an interesting short sketch of this remarkable woman, who was born at Heidelberg in 1652. In 1671 she married Philip of Orleans ("Monsieur"), brother of Louis XIV, and widower of Henrietta of England. (Henrietta was the daughter of Charles I and Henrietta Maria, and married Philip in 1661. She was very popular with *le roi soleil*, but was soon estranged from her husband. In 1670, at Louis's instigation, but without Philip's consent, she visited England and obtained the signatures of Charles II's ministers to the Treaty of Dover. Shortly after her return to France in that same year she died at Saint Cloud, and it was asserted that she had been poisoned at the command of her husband. But that is another story.) After her marriage Liselotte ("Madame") lived at the court of Louis XIV, making fun of some of its members, criticizing others, and writing endless letters to her friends and relations about the doings at Versailles and the various royal castles. Madame was obviously an energetic lover of sport, for she followed on horseback even the longest and most arduous hunts. One had to be strong to stand up to the life at Versailles and Fontainebleau. Immediately after returning from the hunt, she had to change her costume and appear before *le roi soleil* (who was not partial to sick people), and never allow her weariness or her worries to be evident.

Madame preferred to treat herself when she was ill, showing clearly that she had very little confidence in the learned members of the medical profession in attendance at the court. Madame de Sévigné wrote in 1671 that "when Madame feels ill, she walks two leagues and affirms that she is cured". In 1673 Madame wrote:

> In Paris no child is safe; the doctors have already dispatched into the next world five of the Queen's children and three of Monsieur's.

In 1704 she stated categorically that they had "assassinated" her granddaughter, "as if they had killed her with a pistol shot through the head", with the 17 violent drugs that ended her life. Madame openly denounced the blood-lettings to which the Duke of Burgundy and the Duke of Anjou were subjected; the children were aged respectively five and four years. On February 12, 1712, the death occurred of the sprightly Duchess of Burgundy, at the age of twenty-seven years; she was the favourite child of Louis XIV, and the darling of the court. Madame was sure that the doctors had killed her. Chirac and Fagon had given the patient a powder to make her perspire; whilst she was perspiring freely, and covered with red spots, they plunged her into hot water, and then bled her for the fourth time, so much that the red spots faded away, and she faded away, too. Madame, who was present, tried to prevent this treatment; but her old enemy, Madame de Maintenon, intervened. On March 8 of the same year there was another tragedy—the death of Louis of Brittany, the little Dauphin. He had contracted measles, and was shivering with a high temperature when the nine eminent medical attendants decided to bleed him copiously; they then gave him an emetic. In Madame's opinion they killed the boy. His young brother (later Louis XV), who was suffering from the same infection, was simply left in the care of his governess, Madame de Ventadour; she did nothing but keep him warm, and he recovered. Madame never forgave Fagon for his part in the treatment of the Duchess of Burgundy. After the death of Louis XIV she wrote:

> I am convinced that if the King, who was only seventy-seven years old, had not been purged by Fagon so often and so barbarously, he would have seen his eightieth year.

The only members of the medical profession for whom she seems to have had any regard were the Englishman Talbot and her surgeon Carrère. Her dislike of doctors not unnaturally extended to their treatments. She hated the bleedings that were carried out, and viewed with suspicion the customary frequent purgations; these she ultimately had to undergo herself. On May 13, 1719, she wrote that a bowl of *bouillon* made from water-cress, chervil and chicory was very bitter and had a horrible taste; but she preferred it to the hot marshmallow with a vegetable salt which she was usually given. On July 16, 1722, a little before her death, she wrote as follows:

> This morning they required me once more to take my vegetable purgative, but I refused, saying that the only way for me to recover a little health was to continue to eat in my usual way. M. Teray [her usual medical attendant] considered that I was right, and asked me what I generally did when I had no appetite. I told him that I was usually given vermouth to drink. He hesitated at that; they will give me some. . . .

Madame was always on the lookout for new remedies for her minor ailments, especially for her painful knees. In 1711 she was promised for their treatment oil of cacao

[1] *Presse méd.*, December 1, 1955.

from Guadeloupe; if this failed, she intended to use balsam of Peru, but she did not know how it was employed. In that year, after the Easter Mass, during which she was for a long time on her knees, she eased her pain by applying English flannel, which she said was a more practical method than rubbing in ointments. However, she had faith in elixir of Garrus, which she was advised to use by Teray, and considered that the aged Marshal de Villeroy had been saved by it; it was at that time regarded as a panacea. Amongst the other drugs which Madame favoured were Glauber's salts and copaiba. On the subject of the latter she wrote:

> Thank God, my health is very good, and if I did not at times suffer from pain in my knees, I should be able to say that it is perfect. Bitter wine in copaiba oil is doing me a great deal of good. It does not purge and has no outward effect, but it strengthens you and makes you pass urine more frequently than usual, which prevents the feet and legs from swelling.

In 1718 the picturesque and eccentric Lady Mary Wortley-Montagu brought back to England from Turkey the practice of inoculation for smallpox. She had her own children inoculated; but she encountered much prejudice in bringing the matter forward. In 1721 Madame wrote as follows:

> I confess that never in my life could I have made up my mind to have my children inoculated whilst they were in good health; but the Princess of Wales is more intelligent than I was—everything went well, thank God! They claim that one does not take smallpox when one has been vaccinated.

In 1719 the son of Madame de Dangeau contracted smallpox, and it was thought impossible to save him; Madame gave it as her opinion that the smallpox could not spread, since he had only one leg, and therefore the disease would reach his brain and carry him off quickly.

Madame's enmity towards leading medical men, especially Fagon (apparently the protégé of Madame de Maintenon), may well have been overdone. They certainly made mistakes; but who does not? Historians who can appraise the position over the intervening centuries will almost certainly agree that the best of them conscientiously did their duty in the light of the knowledge available to them at the time, with a full sense of their responsibility to the patients in their care. No doctor—indeed, no one in any walk of life—can do more.

THE HEALING OF WOUNDS.

MUCH work has been done on the sequence of events in the healing of wounds. Most of the investigations have been on the relations between tensile strength of healing wounds and the histological appearance. As a result of this the healing process has been divided into three stages: an initial lag period of one to four days' duration; a phase of fibroplasia lasting from four to ten days; and a final stage of cicatrization of variable duration. During the past few years a number of histochemical methods have been developed for the estimation of various constituents of tissues, as well as direct chemical methods of estimation.

J. E. Dunphy and K. N. Udupa[1] have used some of these methods to follow the changes in the newly formed tissue in healing wounds. Earlier work has shown that fibroblasts secrete a soluble protein which is a precursor of collagen fibres, but the conversion of the precursor to collagen is not completed without the presence in the ground material of a carbohydrate fraction which is a mucopolysaccharide, probably sulphated. Ascorbic acid is also necessary for the completion of the process. A stage in the process between the soluble protein and the collagen fibres is reticulin, which forms very fine fibres chemically different from collagen. Collagen is the only protein in the healing tissues which contains hydroxyproline, so an estimation of this gives the collagen content at any stage. It is not necessary to indicate the other chemical and histochemical methods used. As a result of the quantitative estimations at different stages of healing the authors divide wound healing into two phases: an early productive or substrate phase lasting from one to five days after infliction of the wound; and a collagen phase lasting from the fifth or sixth day until healing is complete. After an initial period of no more than twelve to twenty-four hours there is a rapid production of ground substance, as measured by hexosamines, constituents of the polysaccharides. This reaches a peak somewhere between the third and sixth day and there is then a steady decline. It is not possible yet to measure the production of the collagen precursor, but as collagen begins to appear on the third to the sixth day, presumably the greatly increased numbers of fibroblasts are producing the precursor from this time on. The increase in tensile strength of the healing wound runs exactly parallel with the increase in collagen, so the two are obviously related. There is an increase in reticulin as shown by silver staining towards the end of the first phase, and as collagen increases reticulin decreases. In scorbutic guinea-pigs the first stage is greatly extended and there is no collagen stage. The concentration of mucopolysaccharides rises steadily to a figure considerably higher than is seen in wounds in healthy animals. Much reticular silver staining substance appears in the wound tissue, and there are abundant fibrocytes. There is, however, little or no collagen. In less than forty-eight hours after the administration of ascorbic acid such a wound will pass into the collagen phase. In an animal on a highly deficient protein diet the productive phase is prolonged and the collagen phase, which starts on the seventh or eighth day, progresses more slowly than normal. In these cases the administration of methionine renders conditions normal. How this works is not known, but it may be because the methionine contributes to the more rapid utilization of body protein which will supply the necessary building blocks for the processes taking place in the wound tissue.

[1] *New England J. Med.*, November 17, 1955.

THE AGING POPULATIONS OF MODERN TIMES.

MUCH research has been done recently on the problem of the aging population. We have already commented in these columns[1] on the work of J. H. Sheldon carried out in Wolverhampton, England, in which he considered the social and medical needs of old persons.

The cause of this aging, common to such countries as France, Sweden, United States of America, the United Kingdom, Australia and New Zealand, has often been given by medical and social workers as a decline in mortality. However, demographers are now in general agreement that fertility changes are of far greater importance than mortality. Members of the Population Division of the United Nations have given a didactic account of the reasons for this belief.[2] They state:

> It is a common misconception that the ageing of populations is, or has been, chiefly, if not entirely, the result of declines in mortality. As the article will demonstrate, this view is false. Declining mortality or—which is the equivalent—increasing expectation of life, accelerates population growth with respect to all age groups and not merely with respect to the segment at advanced ages. A relative slowing down of population growth in the younger age groups can, however, result from a decline in the birth rate. Birth rates and not death rates are the major determining factor of population structure.
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> Before entering into the more detailed argument, let us first expose two simple fallacies which may have tended to support the misconceived view that declines in mortality have resulted in ageing.
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> It is held, quite correctly, that if the expectation of life at birth—or at any other age—is increased, more persons will eventually attain certain relatively advanced ages. As a result, there will be more old people. Nevertheless, it is an error to forget that, with

[1] M. J. AUSTRALIA, October 23, 1954.

[2] "The Cause of the Ageing of Populations: Declining Mortality or Declining Fertility", *Population Bulletin, No. 4, United Nations*, New York.

increased expectation of life, there will also be more young people. In fact, there are likely to be more people altogether, young, old and middle-aged. The concept of "expectation of life" does not focus attention on this fact, but it should not be disregarded.

Another fallacy stems from a misinterpretation of the experience of certain Western countries where mortality has been declining for a long period and the proportion of aged persons has shown a marked rise. It does not follow that the fall in mortality has "aged" their populations. The same countries have also experienced a marked decrease in birth rates, and it is this which has been primarily responsible for the observed shifts in age composition.

A complete understanding of this problem of aging requires some knowledge of the theory of the life table populations. Some graphs illustrating the theory have been given in this journal by Lancaster[1,2] which show the very great differences which can be brought about by changes in fertility acting long enough. He, too, gave reasons for believing that fertility was of predominant importance. First, mortality alone could not account for the undermining of the population as revealed at the Australian Census of 1933, whereby there were more children aged five to nine years than at ages under five years. Second, the lessenings in mortality have occurred at the young ages, partly compensating for the decline in fertility. Third, between the Censuses of 1933 and 1947 the mortality of men over forty did not become less, although the proportion of the male population at the higher ages increased. Fourth, examples were given to show that the expectation of life at birth is a confusing measure to bring into the discussion. It may be pointed out that such theory is not new. In fact, to William Farr[3] in 1876 the prime source of confusion was the false popular identification of the actual population with the "stationary" life table population which could be constructed from the current mortality rates.

We may conclude on an optimistic note, for, as the Royal Commission noted,[4] the proportion of the economically active age groups in the population, say those from ages fifteen to sixty-four years, stays remarkably constant throughout the various changes in the birth and death rates. This means that the average number of dependants per worker remains constant, but in an aging population the dependants will be the elderly rather than children. In New Zealand it was computed[5] in 1951 that a man might expect to live on an average eight and a half years after retirement.

The economic aspects of the problem in Australia are well appreciated, as is shown by a paper published some time ago by the actuary, A. H. Pollard,[6] and by the appointment recently of an interdepartmental committee in Canberra under the chairmanship of the Minister of Social Services. Moreover, Dr. Sheldon himself is visiting Australia later this year.

SURGERY OF THE RHEUMATIC HAND.

NOTABLE advances in medical treatment and general management have brought new hope to sufferers from rheumatoid arthritis, especially those in whom the condition is not far advanced. Less progress has been made in devising treatment for resultant disabilities when medical management has failed to prevent crippling. This is a major problem, especially when the hands have been left useless, but it is apparent from a recent paper[7] by Sterling Bunnell that the surgeon can do a good deal to help. Bunnell points out that deformities of the hands associated with rheumatoid arthritis are not only due to joint changes but are also determined by contractures of muscles. Deformities in these cases are divided into two types—the "intrinsic-plus" position of a hand entering a coat sleeve, as compared with the claw-hand or "intrinsic-minus" position. Bunnell states that in flare-ups of the rheumatoid arthritis, the finger joints may be so distended with fluid that their ligaments become lax, and the joints are left so loose that they are an easy prey for muscle contracture. The deformities vary according to which set of muscles predominates in their contracture. The muscles are in spasm at first from irritation, but finally are fibrosed and shortened in fixed contracture.

In the early stages much can be done by mild elastic traction to maintain the position of function as soon as contractures commence and before the joints have become fixed. Surgery should be used only in the "burned-out" cases. One approach is by correcting the muscle balance and relieving the tension of the muscles. In some cases arthrodesis to restore the position of function is indicated for the wrist, for some finger joints, and even for both joints of the thumb. Tension may be relieved by tenotomy of the lateral bands or transverse aponeurosis in the fingers; this procedure allows the metacarpo-phalangeal joints to extend and the distal two joints to flex. The tension of all three sets of muscles may be relieved by shortening the metacarpals. This is best done at their bases, by removing a segment of bone and pinning them temporarily with Kirschner wires. Whenever the dislocations of the metacarpo-phalangeal joints can be reduced passively, this is the operation of choice. If, however, these dislocations, whether they are dorsal or volar, cannot be reduced, it is necessary to excise the metacarpal heads and perform arthroplasties. The new joints should be pinned in alignment until enough fibrous tissue contracts around them to give some stability. Ulnar drift can be relieved by the following procedure. If the metacarpals are shortened at their bases, the metacarpo-phalangeal joints can be extended by tenotomy of the lateral bands and of the transverse aponeurosis. Each extensor tendon should be lifted free from the dorsal aponeurosis and transferred and sutured into a slit in the dorsal aponeurosis on the radial side of the knuckle. If arthroplasties are carried out, a similar procedure may be used; a tendon transfer of the *extensor indicis proprius* to the radial side of the lateral band of the index finger and a similar transfer for the little finger will furnish abduction to these fingers. Bunnell states that by use of these procedures in a small series of patients, considerable function has been restored to their pitifully crippled hands. The photographs illustrating his article bear this out.

STUDIES ON THE CEREBRAL CORTEX.

IN 1838 Gerdy described a marginal band of the medial wall of the cerebral hemisphere, surrounding the "hilum", as the "*circonvolution annulaire*". His conception was extended by Foville, then more notably by Broca in 1877, and by Schwalbe and Zuckerkandl subsequently. Broca called the formation the "*grande lobe limbique*", and as such it was adopted into official nomenclature, despite the fact that it is a most heterogeneous collection of cerebral formations—including both olfactory and non-olfactory parts of the "rhinencephalon", as well as some of the "neocortex". In 1895 Grafton Elliot Smith drew attention to the illogicality of including such diverse structures within a single morphological unit, but did not make much impression. Within the last twenty years Broca's "limbic lobe" has come into prominence once more. Before the war Papez identified the "lobe" as the heat (or source) of emotions. Since the war electroencephalographic studies have disclosed some functional unity in parts at least of the lobe, although what this means is far from certain. At all events, sufficient interest was aroused to induce Dr. Lisbeth Kraft to undertake the translation from Spanish of

[1] M. J. AUSTRALIA, May 13, 1950.
[2] M. J. AUSTRALIA, October 2, 1954.
[3] Report of the Registrar-General of England and Wales for 1875.
[4] "Royal Commission on Population", H. M. Stationery Office, 1949.
[5] New Zealand, Table of Working Life, 1951. Male Population (including Maoris). Government Printer.
[6] *Tr. Actuarial Soc. Australasia* (1952), 7: 201.
[7] *J. Bone & Joint Surg.*, July, 1955.

Cajal's original papers on the subject.[1] The translation is accurate and easy and conveys well the style of the original. The book is well produced, the old illustrations coming up excellently.

Cajal did his work after the date of Elliot Smith's comments, of which he was apparently ignorant. In any case, he was no comparative anatomist—his main classification of brains being the nearly century old—"rough" and "smooth" (gyrencephalic and lissencephalic)—so it is doubtful if he would even have understood what Elliot Smith was talking about. Cajal was a superb histologist, but his descriptions have the painstaking air of an archæological "dig", so meticulously is everything described. That, however, was necessary to his time and nature and provides the foundation for a tremendous amount of our present knowledge of the structure of the brain. The book, throughout, reflects the style of the period in which it was written—with insistence upon *minutiæ* of observation and naïve joy when some contrary opinion is "triumphantly refuted". It was a day of pioneers to whom every new fact was a discovery and all had more or less equal value. Interpretation and evaluation came later and have produced the kind of neurology we have today. But interpretation always involves selection along one particular line and rejection along another. Cajal's rather amorphous collections of facts were susceptible of more than one interpretation and might easily have given birth to quite a different tradition of neurological thought. Consequently, while this volume is in the nature of a "collector's piece", a restudy of the facts it presents might very well lead to some new and fruitful ways of looking at neurology. Partly for that reason, and partly for its value as a record of a very exciting period in neurological history, the book should be read by all interested in more than just the bare bones of the subject.

A MEDIÆVAL LINGUECTOMY WITH STRANGE SEQUELÆ.

HISTORY is recorded in other ways than by the written and printed word, and not the least important of these is the picture. From an early stage in his long career man has had the urge to draw, sometimes the familiar objects of his environment, and as his sophistication has advanced, the creations of his mind. In France the setting up of a Museum of Fresco-Painting has called attention to the murals (unfortunately gradually disappearing) on the walls of many churches. R. Vaultier[2] has sought subjects of medical interest in these mural paintings and in stained glass windows, principally of the Middle Ages and the sixteenth century. His paper as a whole does not lend itself to comment in this place, although it is full of unusual information; it would be impossible to do it justice. However, one of the tales told may well be recounted. It concerns the martyrdom of Saint Romanus (*Saint-Romain-le-Puy*), who lived in the time of the Roman emperor Galerius. (It was at the instance of this emperor that the first edict of persecution against the Christians was published.) Saint Romanus was condemned to death, but managed to survive the ordeal without harm. He was untied from the stake and taken before Galerius in order to receive another sentence. Another Christian named Aristo was there, "who had fallen rather by the weakness of his flesh than by failure of his will"; he had been present at the torture of Saint Romanus to gain comfort in his own misery, and to have the joy of watching the victory of another. Aristo was a surgeon, and unfortunately had his instruments with him. On seeing him, the judge forced him, in spite of his protests, to cut out the saint's tongue right down to the root. Saint Romanus joyfully put out his tongue, and made no attempt to shut his mouth throughout the whole procedure. The surgeon kept the tongue as a relic. Miraculously the saint continued to speak, and what is more remarkable, he enunciated clearly although previously he had stammered. Galerius, on being informed of what had happened, suspected Aristo of having disobeyed him; but he was convinced by seeing the tongue and the empty mouth of his victim. There is no indication that Galerius's heart was softened by the episode, and we are told nothing of Saint Romanus's subsequent career. However, he provided a most dramatic illustration of the truth of Lord Chesterfield's statement that "the manner of speaking is full as important as the matter".

[1] "Studies on the Cerebral Cortex (Limbic Structures)", by Santiago Ramón y Cajal; translated from the Spanish by Lisbeth M. Kraft; 1955. London: Lloyd-Luke (Medical Books), Limited. 8¾" × 5½", pp. 192, with 108 illustrations. Price: 27s. 6d.

[2] *Presse méd.*, December 25, 1955.

LAYING A SURGICAL GHOST.

THE modern student of medicine is inclined to assign the practice of heroic surgical techniques to the present era of sterility and anæsthesia. It comes rather as a surprise to note that therapeutic ligation of the carotid arteries was first practised at the end of the eighteenth century. The first case was one of dire necessity after accidental cutting of the artery during surgical treatment. The patient survived, and, thereafter, the technique was applied, with good cause and effect, to the treatment of aneurysm of the carotid artery. The first ligation has always been attributed to the German surgeon Hebenstreit. From the patient research of W. B. Hamby and W. J. Wilson, this credit, whether intentional or otherwise, has now been revealed to be unwarranted.[1] Certainly the operation took place. Medical journalism in the eighteenth century was, to say the least, an inexact art. At some time during the translation into German of "System of Surgery" by Benjamin Bell the account of the operation was inserted. There were several German editions and several German editors, amongst whom was Hebenstreit. The modern surgeons have carefully sifted an historical possibility and perused the various editions of the very accommodating text-book of Dr. Bell. From the evidence available, Hebenstreit loses his claim to fame, though whether the real credit is due to Bell is uncertain. One thing does emerge. The operation for successful ligation of the carotid artery had already been performed not later than the year 1786, and possibly even earlier.

THE ANTITUBERCULOUS ACTIVITY OF VERAZIDE.

IN the issue of *Nature* for November 5, 1955, there appeared over the signatures of S. D. Rubbo, Professor of Bacteriology in the University of Melbourne, and J. Cymerman-Craig, of the Department of Organic Chemistry in the University of Sydney, a short article on the antituberculous activity of verazide (1-*iso*nicotinoyl-2-veratrilidene hydrazine). They observe that the high in-vitro activity of the preparation has already been reported by them and others. Their present report, they explain, deals with the in-vivo action of verazide and "directs attention to its prolonged action and potential value in the treatment of tuberculosis". They carried out their work on guinea-pigs, and, using the "healing ulcer technique", gave intermittent doses of the drug at weekly, fortnightly or monthly intervals. Results which are set out in a table need not be described; they may be summarized in the words of the authors that "verazide is highly active in the treatment of established tuberculosis in the guinea-pig when given in intermittent dōses either at 7-, 14- or 28-day intervals. It is active when given by mouth, but to a lesser degree than by injection".

What needs to be kept well in mind in regard to important work of this kind is that experimental observations made on animals are not necessarily applicable to man. Much more work will have to be done before the giving of verazide to human sufferers from tuberculosis will be justified. The authors' reference to its "potential value" in the treatment of tuberculosis must not be misunderstood. These warnings are necessary because of the glamourized articles on this work which have appeared in certain daily newspapers.

[1] *Surg., Gynec. & Obst.*, December, 1955.

Abstracts from Medical Literature.

PÆDIATRICS.

Tuberculous Meningitis After Vaccination with B.C.G.

R. McL. TODD (*Arch. Dis. Childhood*, June, 1955) describes the occurrence of tuberculous meningitis in two brothers who had been vaccinated with B.C.G. He states that in the first patient the disease developed seven weeks after the vaccination, and it seems reasonably certain that he was in the pre-allergic phase of tuberculosis before vaccination was performed. The second boy developed the disease six months after vaccination had been carried out. During this period he had been well. It is interesting to compare the clinical response of the two patients. In the first, response to treatment was slow, and prolonged therapy was necessary. Ultimately he was apparently cured; his meningitis has been inactive for eighteen months, but he is deaf. In the second patient response to treatment was quick, a much shorter course of treatment was necessary, and recovery appeared to be complete and uninterrupted. The author states that the development of tuberculous meningitis after B.C.G. vaccination is a rare event, and in at least half the cases in which it has been reported it seems likely that the subjects had been infected and were in the pre-allergic phase of the disease before vaccination could have any beneficial effect. He points out that the literature contains reports of 12 children who developed tuberculous meningitis several months after successful vaccination.

Congenital Facial Diplegia.

P. EVANS (*Arch. Dis. Childhood*, June, 1955) has collected over the years nine examples of congenital facial diplegia. He presents the case reports with a discussion of the possible underlying defect. In addition to facial paralysis, the patients had weakness of ocular, mandibular, palatal and lingual muscles, as well as micrognathia, stridor, epicanthus and abnormalities of the hands and feet. The author states that some of these abnormalities, including the facial paralysis, may decrease as the child grows older. It has been suggested that the pareses are due to nuclear agenesis, but the author argues that their association with other defects is difficult to explain if this is so. He suggests that the paralyses are due to a congenital deficiency of muscles developing with the first two branchial arches. He points out that all the major defects are of structures which are formed at the end of the second month of pregnancy. How they become malformed is unknown.

Rickets with Alkaline Phosphatase Deficiency.

B. SCHLESINGER, J. LUDER AND M. BODIAN (*Arch. Dis. Childhood*, June, 1955) describe three patients with a rare bone disorder in which calcification is defective. They state that this has been proved to be associated with deficient production of alkaline phosphatase. It is suggested that the primary fault may be in osteoblast formation and that it would not be unreasonable to call this condition osteoblastic dysostosis. One of the main factors in the diagnosis is the discovery of hypophosphatasæmia, but hypercalcæmia is also present and may result in renal damage and nitrogen retention. This can prove fatal, but in less severe cases recovery can be expected, and calcification of the affected bones ultimately takes place.

Dental Changes in Kernicterus.

R. M. FORRESTER AND J. MILLER (*Arch. Dis. Childhood*, June, 1955) describe a condition of acute enamel hypoplasia of the deciduous teeth which they observed in 13 children suffering from kernicterus following hæmolytic disease. Similar lesions were found in nine premature infants who had developed cerebral palsy, similar but milder enamel changes have been found in normal premature infants, but not in full-term children in the absence of kernicterus. The cause of the enamel lesion is not established.

The Effect of Oxygen Weaning on Retrolental Fibroplasia.

R. H. BEDROSSIAN *et alii* (*Arch. Ophth.*, April, 1955) have conducted a study to evaluate the effect of rapid or slow withdrawal of supplemental oxygen, duration of administration of supplemental oxygen and total amount of supplemental oxygen with a fixed maximum concentration of 50% on the incidence of retrolental fibroplasia. They were able to show that a group of premature infants who were suddenly removed from an atmosphere with a 50% oxygen concentration had a greater incidence of retinopathy of prematurity than did another group who had a gradual reduction in oxygen content. On the other hand infants who had progressive retinopathy were benefited by oxygen therapy. The authors recommend that the administration of supplemental oxygen to premature infants should be limited to minimum amounts, and a 40% concentration in the incubator should not be exceeded. Once retinopathy has developed, the judicious use of oxygen is valuable, provided it is gradually withdrawn.

Thiourea Derivatives in Thyrotoxic Children.

R. H. KUNSTADTER AND A. F. STEIN (*Am. J. Dis. Child.*, October, 1955) report the results of treatment of 17 children with thyrotoxicosis. They were all treated by thiourea derivatives, but subtotal thyroidectomy was also carried out in five cases for the following reasons: drug failure, marked enlargement of the thyroid, psychotic episodes and cardiac complications during early treatment, poor cooperation from a badly disturbed child, and the development of a nodule in the thyroid suspected of being a neoplasm. The remaining 12 patients were treated by medical means only. Of these six have been in remission for five years or more, two have been in remission for two to five years, and the remaining four are still under treatment and progressing satisfactorily. Prolonged treatment of from six to thirty-six months was necessary. The children tolerated the drugs well, in most cases taking the full adult dosage without evidence of toxicity. Where satisfactory remission was obtained, growth and sexual maturation proceeded normally.

Portal Hypertension.

D. Y. HSIA AND S. S. GELLIS (*Am. J. Dis. Child.*, September, 1955) report their experience during a thirty-year period in which they treated 43 infants and children suffering from portal hypertension. Of these children, 21 were found to have primary portal hypertension due to extrahepatic obstructions. There was in each a history of umbilical infection during early infancy. Enlargement of the spleen and hæmatemesis occurred early. There was no jaundice, but there was frequently a depression of circulating blood elements. The 22 other patients were found to have portal hypertension secondary to cirrhosis of the liver. Hepatitis seemed to have been the commonest cause of this, and in many of these children the results of liver function tests were very abnormal. Operations to provide a venous shunt from the portal system appeared to be the treatment of choice in children with primary portal hypertension. In those in whom the portal hypertension was secondary to disease of the liver, the outlook was less favourable. However, it was felt that the venous shunt improved this poor outlook somewhat and was worth employing even in this group of patients.

Fibrocystic Disease of the Pancreas.

R. HARRIS, A. P. NORMAN AND W. W. PAYNE (*Arch. Dis. Childhood*, October, 1955) report a study of the effect of "Pancreatin" therapy on the fat absorption and nitrogen retention in children with fibrocystic disease of the pancreas. They concluded that the administration of "Pancreatin" improved the absorption and utilization of fat and protein in these children as shown by gain in weight, positive nitrogen balances and increased fat absorption. Five grammes of "Pancreatin" with each meal is probably the largest dose required, and any increase in this amount resulted in very little improvement in digestion. Although they sometimes found that there was an increase in bodyweight when larger doses of "Pancreatin" were given, the authors suggest that it was due to the increased nitrogen intake obtained from the "Pancreatin" rather than to improvement in digestion. Intercurrent illnesses diminished the absorption of fat and nitrogen even though large doses of "Pancreatin" were being given.

Non-Pancreatic Lipase.

C. A. C. ROSS AND H. G. SAMMONS (*Arch. Dis. Childhood*, October, 1955) describe studies of non-pancreatic lipase in children with fibrocystic disease of the pancreas. They found that children who produced no pancreatic lipase whatsoever could absorb a considerable proportion of the fat in their diet, and the authors were thus led to investigate various sources from which the lipase

could be obtained by the child. They examined a number of foods and found that fresh unpasteurized milk was the only one that contained lipase. There was considerably more of the enzyme in human than in cow's milk. Pasteurization destroyed the milk lipase and rapid loss of its activity occurred at room temperature. They also found that lipase was present in the stools of these children but was absent both from their gastric juice and from cultures of organisms from their intestines. They concluded, therefore, that some lipase was produced by the *succus entericus*.

The Hypothyroid Infant and Child.

D. A. FISHER *et alii* (*Am. J. Dis. Child.*, July, 1955) have treated 12 hypothyroid infants and children with sodium *l*-thyroxine. Thyroxine was first isolated in 1915 and subsequently synthesized in 1926 to 1927. The lævo-rotatory isomer has been found to be more active metabolically, and by mouth it is most effectively absorbed as the sodium salt. As compared with dried thyroid extract, sodium *l*-thyroxine seems to have a more predictable effect upon serum hormone or iodine and upon the basal metabolic rate, and to produce a more reliable clinical response. The 12 children treated included nine with congenital cretinism and three with acquired hypothyroidism. Just as with dried thyroid extract, the dose required must be determined by trial in each individual patient, but the amount usually effective was 0·2 to 0·6 milligramme of *l*-thyroxine per day. To determine the satisfactory maintenance dosage for each child, the authors depended on the disappearance of the classical evidences of hypothyroidism, the maintenance of satisfactory body growth, the regular estimation of osseous age and estimations of the level of serum hormonal iodine concentration. They believe that this last-mentioned estimation is of particular value in early infancy, when a rapid appraisal of therapy is essential, and at adolescence, when dosage by age is a less critical guide. Optimal replacement therapy with sodium *l*-thyroxine maintained the serum hormonal iodine concentration within a range from 6γ to 12γ per 100 millilitres. The treatment was free of toxic effects.

ORTHOPÆDIC SURGERY.

Isolated Paralysis of the Serratus Anterior Muscle.

J. T. H. JOHNSON AND H. O. KENDALL (*J. Bone & Joint Surg.*, June, 1955) present and analyse 20 cases of isolated paralysis of the *serratus anterior*. Strength of the *serratus anterior* at the first visit ranged from 0% to 30%, with an average of 10%; at the third month, it was from 45% to 60%, with an average of 50%, in eight recorded cases; at the sixth month, strength of the *serratus anterior* was from 70% to 100%, with an average of 85%, in 10 recorded cases. In seven cases, follow-up was incomplete or the lesion was too recent for evaluation. The associated trapezius strength was as follows: upper trapezius fibres, average 100%; middle and lower trapezius fibres, average 65%. Associated rhomboid and pectoral tightness was noted in 13 cases and was not mentioned in seven. When the *serratus anterior* was completely paralysed, it was rested by means of a scapular cup type of brace, which was worn day and night. For moderate weakness of the *serratus anterior* the brace was worn during the day. For patients with slight weakness of the *serratus anterior* a canvas brace was worn during any activity which required lifting a weight with the affected arm. In all types exercises for the affected muscle were performed according to the degree of paralysis. The authors state that at six months the relation of treatment to the end results could be evaluated as follows: in six patients treated with the scapular cup type of brace, the average *serratus anterior* power was 90%; in two patients treated with the canvas brace, the average *serratus anterior* power was 80%; in two patients treated by physical therapy alone, the average *serratus anterior* power was 85%.

Fractures of the Humerus.

M. J. STEWART AND J. M. HUNDLEY (*J. Bone & Joint Surg.*, July, 1955) have reviewed 546 cases of fracture of the humerus. These comprised 271 fractures of the neck of the humerus, 233 of the shaft and 52 of the head. They point out that fractures of those bones which have a rich blood supply, such as the rib, femur or humerus, where there is slight motion at the fracture site, usually heal rapidly. This takes place provided that there is no infection or mechanical interference, such as excessive trauma, interposition of soft tissue, gross malposition, internal fixation or compounding of the fracture. Undisplaced fractures of the neck of the humerus, or impacted fractures in patients of the older age group (over sixty years), are best treated by a collar-and-cuff sling and early, active exercise. Impacted adduction fractures of the neck must be reduced and immobilized in abduction. As a rule, abduction fractures without avulsion of the greater tuberosity may be reduced by manipulation and immobilized in a hanging cast. If the tuberosity and rotator cuff are displaced, they must be reduced accurately, usually by surgical means. The treatment of choice for all fractures of the shaft at any level is the hanging cast, provided (i) that traction is never excessive, (ii) that angulation and apposition are controlled, and (iii) that the "hanging-cast rules" are observed. These rules are as follows: (*a*) The plaster must be light and never a distracting force. (*b*) The elbow must be in flexion of 90°, and the plaster should extend from the mid-palm to the fracture level or not more than one inch above it. (*c*) The sling must be fixed at the level of the wrist. (*d*) To correct lateral angulation, the loop should be placed on the dorsum of the wrist; to correct medial angulation, the loop should be placed over the volar side. (*e*) A long sling should be used to correct posterior angulation; a short one to correct anterior angulation. (*f*) The arm must be continuously dependent, that is, in traction. (*g*) Antero-posterior and lateral skiagrams should be made at weekly intervals or more frequently if this is indicated. (*h*) Early, active, vigorous exercises of the "longitudinal muscles" of the shoulder (four to six times daily) are imperative. (*i*) Systematic resistance exercises of the fingers and thumb are essential. (*j*) If the patient must remain recumbent, traction must be maintained at the elbow in line with the humerus. The authors state that fracture of the humerus in children under the age of twelve years should not be treated with the hanging cast method *per se*. Anæsthesia is seldom necessary for the reduction of uncomplicated fractures of the neck or shaft, provided that traction is properly utilized. Thus, the necessity for hospitalization is reduced to a minimum. Since medullary fixation is gaining wide popularity, it is well to reemphasize the success of conservative treatment of these fractures.

Spondylolisthesis.

D. M. BOSWORTH, J. W. FILDING, L. DEMAREST AND M. BONAQUIST (*J. Bone & Joint Surg.*, July, 1955) state that the forward slip of the vertebral body and the defect in the *pars interarticularis* in patients with spondylolisthesis represent only a part of the anatomical alteration present in such cases. The arch of the displaced segment tends to provide support for the spine and to prevent further slipping. Removal of the arch is advisable, but only if it is replaced by a bone graft to give adequate support. Pain in spondylolisthesis is the result of more than one ætiological factor. The authors believe that it is due to the impingement of malaligned bony elements and to abnormal stress on fibrous or ligamentous structures. Extradural pressure from prolapse of an intervertebral disk occurs occasionally. Pressure from hypertrophied fibrocartilaginous tissue in the defect of the *pars interarticularis* has not been noted by the authors. Disk degeneration *per se* cannot cause pain. Spinal fusion, by the technique described, can be obtained in 85% of patients primarily, and in 90% after repair of the pseudarthroses. Relief of symptoms resulted in 89% of the patients with solid fusion of the affected area of the spine. Once solid fusion has been obtained, bony support of the weakened area not only is reestablished, but is permanent.

The Resection-Angulation Operation for Hip-Joint Disabilities.

H. MILCH (*J. Bone & Joint Surg.*, July, 1955) has operated on 56 patients, nine of whom had non-union of fracture of the neck of the femur and 47 had various types of non-traumatic hip disability. The operations were performed for the relief of pain and the restoration of function. The author states that this operation not only appears to be the "redemption operation" of choice when arthroplasty or operative treatment of fracture of the neck of the femur has failed, but merits careful consideration as a primary operation. Quite apart from its success in overcoming pain, it yields a very high proportion of good functional results, particularly in the patients with unilateral disability, for whom other types of prosthetic operations are now being recommended.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held at the Royal Prince Alfred Hospital, Camperdown, on May 19, 1955. The meeting took the form of a series of clinical demonstrations by members of the medical and surgical staffs of the hospital.

Asymptomatic Pulmonary Lesions.

DR. COTTER HARVEY, DR. H. M. RENNIE, DR. G. L. McDONALD and DR. J. S. MACMAHON, from the Thoracic Unit, presented details of a series of cases illustrating discrete asymptomatic pulmonary lesions.

A woman, aged forty-five years, had undergone radiological examination as a contact of her daughter, who was known to have pulmonary tuberculosis. A round lesion was seen in the apex of the lower lobe of the right lung. A resection of this segment was performed, and the lesion was found to be a tuberculoma.

A man, aged sixty-six years, had had several attacks of what seemed to be hysterical aphonia. X-ray examination of his chest showed a round lesion in the lingula. The upper lobe of the left lung was removed in October, 1953, and the lesion found to be a bronchial carcinoma. Subsequently the patient had remained well.

A housewife, aged fifty-eight years, had spent all her life in the country. She was a diabetic. She had had several attacks of pneumonia, but her chest had been reported radiologically normal six years prior to the present examination. When a chest X-ray examination was made because her "glycosuria" was becoming uncontrollable, the examination showed a lesion very like a hydatid cyst, although the result of a Casoni test was negative. At operation a hamartoma was removed.

A male engineer, aged fifty-four years, who was practically a non-smoker and had no symptoms, took part in a mass X-ray examination in June, 1954. A coin shadow was revealed. His Mantoux reaction was found to be positive at a dilution of 1:100. The result of a Casoni test was negative. The patient refused operation and was kept under observation. Further X-ray examination in February, 1955, showed that the shadow had increased by one-eighth of an inch in diameter. The patient was then persuaded to undergo thoracotomy. Dr. MacMahon performed lobectomy, and the patient made an uneventful recovery. Examination of the tissue removed showed the presence of an adenoma.

A male business executive, aged fifty-six years, had undergone radiological examination as a contact of his wife, although he had no symptoms relevant to a lung lesion. He said that he had been "better lately than for some years", but had been treated for blood pressure. The following report was made on the X-ray film: "There are four distinct masses varying in size from one inch to four inches in their long diameters. There is well marked peripheral calcification in these masses. They all almost certainly lie in the left upper lobe in its lower two thirds. These are almost without doubt hydatid cysts. There is no evidence of any abnormality on the right side." Further investigation revealed that the patient had spent his boyhood days in the country. However, the result of a Casoni test was negative. His blood pressure was 200 millimetres of mercury, systolic, and 120 millimetres, diastolic. Electrocardiography revealed delay in bundle conduction and evidence of myocardial defect. It was decided not to submit the patient to operation, and he subsequently kept perfectly well. The radiological appearances of his lungs were unaltered after nine months.

A man, aged forty-nine years, whose occupation was described as that of a manager, had an X-ray examination in October, 1953, when going on National Service. The radiologist reported the presence of a "mass under right clavicle? carcinoma? P.T.? hydatid", and advised further radiological investigation. The patient was quite well at the time and no further action was taken. When subsequently examined in January, 1955, he was complaining of soreness in the right side of the chest, present for four months, and now noticed a "cigarette cough". He smoked 20 cigarettes a day. He had also lost three stone in weight in six months, his weight having dropped from fifteen stone ten pounds to twelve stone eight pounds. He now had clubbing of the fingers, and examination revealed dullness and absence of breath sounds over the upper lobe of the right lung. Bronchoscopic examination revealed the presence of inoperable bronchial carcinoma. The patient died two months later.

A man, aged fifty-seven years, who was a member of the staff of a metropolitan hospital, had undergone routine chest X-ray examination in August, 1953. A rounded lesion was found in the upper lobe of the right lung. At the time the patient was quite well. He was referred to the Royal Prince Alfred Hospital, where investigations failed to reveal the nature of the lesion. The results of bronchoscopic examination were negative. However, on continued observation, the lesion was seen to be slowly increasing in size; the patient began to complain of slight dyspnœa, and he lost a few pounds in weight. At thoracotomy a large tumour was found in the upper lobe of the right lung, and right pneumonectomy was performed. The patient died three weeks after operation as a result of cerebral metastases.

A man, aged twenty-three years, during recruitment to the army had routine chest X-ray examination. This showed a rounded lesion in the lower lobe of the left lung. He had had one attack of pneumonia. The results of Casoni and complement-fixation tests were negative, and the patient was quite asymptomatic. At operation, a large hydatid cyst was found in the lower lobe of the left lung, and lobectomy was performed.

A woman, aged thirty-nine years, had been told seventeen years previously that she had a small hydatid cyst in her right lung. She had no further symptoms, but it was felt that the lesion should be removed. A right lower lobectomy was performed, and the lesion proved to be a cyst of obscure origin filled with pus.

Chronic Myeloid Leuchæmia Treated with "Myleran".

The first of three patients from the Thoracic Unit shown by DR. MAURICE JOSEPH was a woman, aged fifty-four years, who had been found to be suffering from chronic myeloid leuchæmia in 1949. Since then she had been treated by repeated courses of deep X-ray therapy. In March, 1955, she was admitted to hospital complaining of weakness, exhaustion, dyspnœa and dragging pain in the left hypochondrium. The spleen and liver were greatly enlarged. Her blood hæmoglobin value was 9·6 grammes *per centum*, and she had a total of 155,000 leucocytes per cubic millimetre, made up of myeloblasts 4%, premyelocytes 2%, neutrophile myelocytes 7%, total neutrophile cells 73%, lymphocytes 0%, monocytes 2%, eosinophile cells 3%, and basophile cells 8%; there was one nucleated red blood cell per 100 leucocytes, and the platelets numbered 600,000 per cubic millimetre. Treatment with "Myleran" was commenced, in a dosage of two milligrammes three times a day. After eleven days the leucocyte count had not changed appreciably, and the dose was increased to four milligrammes three times a day. After sixteen days of this dosage the leucocyte count fell to 60,000 per cubic millimetre, and the spleen was much smaller. The dose was then reduced to six milligrammes per day, suspended for six days, and resumed at a dosage of four milligrammes per day. At the end of this period the leucocyte count had fallen to 7300 per cubic millimetre, and the blood film appeared normal apart from a rather high percentage of basophile cells (13%). The hæmoglobin value was 11·5 grammes *per centum*, and the platelets numbered 320,000 per cubic millimetre. The patient felt very well and had no toxic symptoms. The liver could no longer be felt, and the spleen could be felt only on deep inspiration. The patient's condition was stabilized on a dose of four milligrammes and two milligrammes of "Myleran" on alternate days.

Pulmonary Sarcoidosis.

The second patient shown by Dr. Joseph, a woman, aged thirty years, had been treated in hospital in 1948 for "pneumonia". However, on discharge from hospital, she was told that she had pulmonary tuberculosis and was referred to a chest clinic; there she was treated for the next four years as suffering from tuberculosis, though some doubt was cast on the diagnosis, since, despite widespread pulmonary changes, no organisms were found in the sputum. In August, 1953, she was confined in an ambulance on her way to hospital, and *post partum* had a continuous fever, which had not settled after one month in hospital with treatment by various antibiotics. Nevertheless, she was discharged to the care of her local doctor, who tried further courses of antibiotics without effect. On her subsequent admission to the Royal Prince Alfred Hospital she had a temperature of 103° F. and a pulse rate of 120 per minute, and widespread crepitations were audible in her lungs. Though dyspnœic, she did not look ill. She had a leucocyte count of 11,500 per cubic millimetre, a hæmoglobin value of 14·1 grammes *per centum* and a blood sedimentation rate

of 15 millimetres in one hour. The sputum contained mixed organisms and no tubercle bacilli. The result of a Mantoux test with 1:1000 old tuberculin was doubtful, but on repetition of the test with 1:100 dilution the result was positive. She was given streptomycin and isoniazid for two weeks, followed by massive doses of penicillin for ten days, all without apparent effect. Eventually, after one month, cortisone was given in doses of 100 milligrammes daily with dramatic effect. The temperature, which had ranged between 101° and 103° F., came down to normal in two days. Treatment with cortisone was continued in reduced doses and in conjunction with streptomycin and isoniazid for one month. Towards the end of that period the patient had another sudden rise in temperature up to 104° F. while receiving 50 milligrammes of cortisone daily. However, the fever was short-lived, and when it subsided, therapy was suspended. In February, 1954, a lymph gland was removed from the scalene region, and was found histologically to have the structure of sarcoidosis. The patient remained well, with dyspnœa as her only symptom, until July, 1954, when she had a rigor followed by severe breathlessness and cyanosis. She was readmitted to hospital, desperately ill, with a temperature of 104·6° F., greatly increased respiratory and pulse rates, and a blood pressure of 100 millimetres of mercury, systolic, and 60 millimetres, diastolic. She was put in an oxygen tent and given "Methedrine" and cortisone, as well as streptomycin, isoniazid and penicillin. Râles were audible in both lungs, and cyanosis and distress became intense if she was taken out of the oxygen tent. Hypotensive episodes continued to occur and were treated with "Methedrine". Penicillin therapy was suspended after a fortnight, but the administration of cortisone, streptomycin and isoniazid was continued. Her condition gradually improved, but it was a month before she could exist without added oxygen. She was discharged from hospital at the end of September, receiving cortisone, potassium chloride, isoniazid and PAS. This therapy was continued for nine months and had only recently been stopped. Her present clinical condition was very good, but she was still somewhat breathless on exertion. Her X-ray films formed an interesting series. Although there had been widespread pulmonary infiltration, changes had always been greater at the apices, and hilar adenopathy had been absent. The radiographic appearance had fluctuated considerably, but there had been a steady improvement in the picture since cortisone therapy had been commenced. Apart from the pulmonary changes and the positive biopsy finding from the scalene lymph gland, there had been no other manifestations of sarcoidosis. X-ray films of the hands showed no bony changes. The results of many sputum examinations by direct smear, culture and guinea-pig inoculation methods had been negative for tubercle bacilli. Dr. Joseph commented that the occurrence of episodes of high fever in association with pulmonary sarcoidosis was uncommon and its explanation obscure.

Bronchiectasis with Incipient Cerebral Abscess and Macrocytic Anæmia.

Dr. Joseph's third patient, an undersized boy of ten years, had a long history of chronic loose cough dating from an attack of measles with bronchopneumonia at the age of eighteen months. In the first eight years of life he had had so-called pneumonia seven times. For two weeks before his admission to hospital he had been growing listless and anorexic, and later had a rigor and complained of pain in the chest. He was admitted to a district hospital with a high fever, and on the following day was transferred to the Royal Prince Alfred Hospital. He was then deathly pale and had a temperature of 101° F. with greatly increased respiration and pulse rates. He had clubbing of the fingers and signs of pulmonary infection involving both lungs. Blood count showed a total of 960,000 erythrocytes per cubic millimetre, a hæmoglobin value of 3·4 grammes *per centum*, a colorimeter index of 1·18 and a leucocyte count of 9900 per cubic millimetre. He was put in an oxygen tent and given penicillin and a transfusion of packed red cells, which brought his hæmoglobin value up to 10 grammes *per centum*. His condition rapidly improved, and after four days "Acromycin" was substituted for penicillin, since examination of the sputum showed organisms which were penicillin-resistant. Six days later he became very listless. Again the temperature rose to 101° F., and he vomited several times. The spleen was just palpable, and there were no abnormal neurological signs. Over the next few days his condition deteriorated. A lumbar puncture showed the cerebro-spinal fluid to be under a pressure of 190 millimetres of fluid; it contained 58 cells per cubic millimetre (88% of which were lymphocytes), a protein content of 75 milligrammes per 100 millilitres, an increase in globulin content, and a sugar content of 43 milligrammes per 100 millilitres. Electroencephalography showed a left-sided disturbance consistent with an abscess, most likely of the left fronto-temporal region. A left frontal burr hole was made, and the brain was needled, but no abscess was discovered. The patient remained drowsy for about a month, but thereafter his mental state steadily improved to normality. However, the hæmoglobin level fell progressively, and further transfusions were given. The anæmia was macrocytic, and the test meal examination showed achlorhydria. Radiological studies showed appearances consistent with a malabsorption syndrome. Vitamin B_{12} was then given with dramatic effect; a reticulocyte response of 6% occurred, and in eighteen days the hæmoglobin value rose from 6·0 to 11·5 grammes *per centum*. Bronchography, after bronchoscopic aspiration, showed pronounced bronchiectasis of the lower lobe and lingula of the left lung. A blood count on May 11 showed a hæmoglobin value of 12·7 grammes *per centum*, an erythrocyte count of 4,400,000 per cubic millimetre and a mean corpuscular volume of 91 cubic microns. It was not thought that the patient had cystic disease of the pancreas, but that possibility would shortly be investigated by duodenal intubation.

Acute and Chronic Pancreatitis.

DR. A. W. MORROW and DR. S. J. M. GOULSTON presented a series of patients and case histories illustrating the conditions of acute and chronic pancreatitis.

A male brewery employee, aged thirty-five years, had had an attack of acute upper abdominal pain in 1951. It followed an alcoholic bout and necessitated his admission to hospital. Abdominal guarding and release tenderness persisted for three days and subsided on treatment with suction and intravenous fluid therapy. Eighteen months later a second attack of pain occurred with similar features *plus* mild diarrhœa following the attack; that also responded to conservative therapy. The third attack, four months later, was more severe; the upper abdominal pain radiated into the back but subsided within four days after the patient's admission to hospital. Each attack was accompanied by the following features: a preceding alcoholic bout and a very large meal; high epigastric pain, nausea, vomiting, guarding and release tenderness; fever lasting for about seven days, transient hypertension lasting for four to seven days; a raised serum amylase level returning slowly to normal after fourteen days; leucocytosis; mild diarrhœa for several days after the onset of the pain; periods of apparent good health in between bouts of pain. In summary, the condition was described as mild relapsing pancreatitis, probably pancreatic œdema without severe necrosis, produced by alcohol.

A married woman, aged twenty-nine years, had first experienced high epigastric pain in June, 1951; the pain was intermittent, did not radiate, was associated with nausea and vomiting and became more severe until September, 1951, when at laparotomy acute hæmorrhagic pancreatitis was found, and the lesser sac was drained. After operation, the pain returned in attacks lasting up to two months and was accompanied by radiation into the back, loss of weight and vomiting. Investigation revealed the presence of stones in the gall-bladder, a flat glucose tolerance curve, no evidence of pancreatic insufficiency on duodenal intubation, and normal serum amylase levels. At laparotomy in September, 1954, chronic cholecystitis and cholelithiasis were found. A common opening of the common bile duct and duct of Wirsung was present, but the sphincter of Oddi was normal, as was the pancreas. The sphincter was divided and a "T" tube left in the common bile duct. After this the patient was free from pain, and the "T" tube was subsequently removed. The condition was summed up as chronic gall-bladder disease associated with acute pancreatitis and possibly causing recurrent obstructive pancreatitis of mild degree.

A young woman, aged seventeen years, in 1952 had suffered a severe attack of epigastric pain, nausea and vomiting lasting three weeks. It followed an attack of mumps four months previously. Appendicectomy relieved the symptoms. Twelve months later a second attack of severe epigastric pain occurred and lasted four weeks. The pain radiated through to the back and was accompanied by jaundice and vomiting. During the next two years repeated attacks of nausea and vomiting occurred after meals, culminating in an acute severe attack of pain radiating into the back, with vomiting, diarrhœa, jaundice and abdominal tenderness and guarding. In the sixth week of this acute attack the patient was admitted to hospital and found to have a serum amylase content of 1600 milligrammes per 100 millilitres, leucocytosis and jaundice of the obstruction type. On treatment with suction and the intravenous administration of fluids the symptoms subsided. Whilst the patient was in hospital, three further similar attacks occurred requiring treatment

with suction, antispasmodics, intravenous therapy and analgesics. The gall-bladder function was normal. Laparotomy during a quiescent phase revealed a chronic fibrotic pancreas with fat necrosis and a dilated common bile duct without obvious obstruction. A long "T" tube was left in the common bile duct with one arm in the duodenum. After operation a further very severe attack of pancreatitis occurred, and the patient's condition was desperate. However, she recovered from this and subsequently remained well with no further attacks of pain. Her condition was described in summary as relapsing acute pancreatitis with seven attacks in three years following mumps in a young girl with a normal gall-bladder.

A man, aged sixty-two years, a teetotaller, had had angina for years, hypertension and chronic cholecystitis. In the two months before his admission to hospital he had had three attacks of severe epigastric pain radiating through to his back, associated with nausea and vomiting. When admitted to hospital during such an attack, he was found to have localized rebound tenderness and guarding in his epigastrium. He was jaundiced, and liver function tests showed an obstructive picture. His serum amylase content was 1600 milligrammes of glucose per 100 millilitres. He was treated with Wangensteen's suction and administration of saline, and quickly settled down; after one week his serum amylase content had fallen to 270 milligrammes per 100 millilitres. Three weeks after his admission to hospital, while convalescent, he developed a typical anterior myocardial infarction, but after four weeks of anticoagulant therapy, he was discharged from hospital, well. In summary, the patient's condition was described as mild pancreatitis, probably amounting to pancreatic œdema. Ætiological factors were considered to be chronic cholecystitis and hypertensive cardio-vascular disease.

A married woman, aged forty-five years, was a heavy smoker and drinker and was regarded as overweight. In 1948 she had undergone cholecystectomy for cholelithiasis with recent symptoms. A year later the pain recurred, being acute and remittent, situated in the right hypochondrium, increasing in severity and radiating into the back on the right side. The common bile duct was explored with negative findings, and the pain continued. The patient obtained some relief by lying prone, but she was now alcoholic, obtaining some relief from pain at the expense of a later exacerbation. She had lost two stone in weight in two years. Duodenal intubation revealed severe pancreatic insufficiency. A plain X-ray examination of the abdomen showed calcification in the head of the pancreas, and at laparotomy localized pancreatitis was found in the head of the pancreas only. Right splanchnicectomy was performed. Since the operation the patient had remained well and free from pain for twelve months. In summary, the condition was one of chronic relapsing pancreatitis associated with alcoholism and localized in the pancreatic head with right-sided pain. Right splanchnicectomy had so far given freedom from pain.

A man, aged sixty-one years, had, since the age of eighteen years, consumed two gallons of beer and a pint of rum daily. He was hypertensive. Twelve months before his admission to hospital he had experienced an attack of quite severe epigastric pain associated with nausea and vomiting. The pain had lasted for four days, and since that time he had had repeated attacks of upper abdominal pain lasting for two or three days and recurring every month or so. He had lost four stone in weight in the last four months. A Graham's test showed normal gall-bladder function. Two days before his admission to hospital the patient again developed severe epigastric pain, associated with nausea and vomiting, and became quite disorientated. On admission to hospital he had severe abdominal pain with guarding and rebound tenderness in the right hypochondrium. A constant trace of sugar was present in the urine. Treatment with suction and intravenous administration of fluids brought about relief of pain with a subsequent fall in the level of serum amylase. The pain and raised serum amylase level recurred when the patient returned to oral feeding. When the pain had ceased, the raised serum amylase level persisted without symptoms; that was unexplained. The condition was summed up as recurrent pancreatitis associated with chronic alcoholism in the presence of normal biliary function.

A married woman, aged forty-seven years, had suffered from attacks of chronic epigastric and right hypochondriac pain for three years before undergoing cholecystectomy in 1952. Gall-stones were found at operation. After operation, a choledochogram showed unexplained narrowing of the terminal part of the common bile duct. Twelve months later, severe attacks of epigastric pain returned, radiating through to the back and lasting two to three days. The patient was admitted to hospital, and pancreatic insufficiency was demonstrated by duodenal intubation. The serum amylase content was normal. The patient then showed evidence of jaundice of the obstructive type; and at laparotomy in September, 1953, chronic pancreatitis was found, and choledocho-jejunostomy was performed. However, pain and vomiting continued, and in July, 1954, right splanchnicectomy was performed. The pain then disappeared for four months, only to return, now radiating around the left side into the back and associated with vomiting and occurring in attacks. After left splanchnicectomy in February, 1955, the patient was free from pain, but postural hypotension was still present. The condition was summed up as chronic relapsing pancreatitis associated with cholecystitis and cholelithiasis relieved temporarily by bilateral splanchnicectomy.

Subacute Scleroderma Involving Skin, Œsophagus and Probably Lungs.

Dr. Morrow and Dr. Goulston also showed a married woman, aged forty-two years, who had been well until May, 1954, when she noticed that her hands were becoming cold and blue. That was followed by swelling of both hands and both feet. Subsequently the slightest trauma was found to produce indolent ulcers more particularly on the backs of the fingers. At the end of 1954, a thick, red rash developed on the skin of her shoulders. Subsequently it spread to her feet and the whole of her trunk, arms and face. The skin on her face became tight, and she found difficulty in opening her mouth widely and smiling. Also, since the end of 1954, she had developed a very mild dysphagia for solid foods, but it did not interfere with her normal eating habits. She had had three attacks of pneumonia, the last about the end of 1954. Her condition was summed up as subacute scleroderma involving skin, œsophagus and probably the lungs.

Endocrine Conditions.

Dr. K. S. Harrison and Dr. J. M. Farrar presented a series of patients from the endocrine unit.

A man, aged thirty-three years, had noticed increasing generalized weakness for a number of years and, more recently, some stiffness of the hands. Prominence of the thyroid gland had been first noticed in 1948, and had increased a little since then. The patient's father had had early baldness and cataracts. The patient himself was found on examination to be thin and bald. The thyroid gland was only slightly enlarged; much of the apparent enlargement was due to the fact that the sterno-mastoid muscles were almost completely atrophic. There was typical myotonic spasm of the adductor muscles of the thumbs. The basal metabolic rate and the blood cholesterol content were normal. The diagnosis was *dystrophia myotonica* with a small simple goitre.

A single woman, aged forty-four years, had developed thyrotoxicosis quite suddenly in February, 1953. Severe exophthalmos with chemosis of the conjunctiva was a prominent feature. The thyroid was only moderately enlarged. Other clinical features were typical. A course of therapy with methyl thiouracil was commenced, but was soon terminated because of drug sensitivity. Treatment with "Tapazole" was commenced in March, and continued throughout 1953, but the toxic condition was never completely controlled. Serial estimations of the basal metabolic rate were carried out during 1953. The readings varied between *plus* 13% and *plus* 43%. In January, 1954, seven millicuries of radioactive iodine were given. During the next two months the patient slowly improved, and by March, 1954, she felt really well for the first time for many months. Since that time a number of basal metabolic rate estimations had been carried out, and the values were between *minus* 11% and *plus* 4%. The patient had come to feel very well. The eyes were still prominent, but did not worry the patient; no chemosis was present. The patient regained weight, and no evidence of toxic effects persisted.

A man, aged twenty years, had developed normally until the age of eleven years, but during the next six years he had gained only about one to two inches in height, and the size of his shoes had increased only from three to four. The changes of puberty also failed to appear. He was troubled by extreme weakness and by muscular inadequacy, although he was intelligent and mentally very alert. He was given intermittent courses of testosterone and thyroid, and developed scanty pubic hair with slight enlargement of the genitalia, but no axillary hair appeared. In March, 1954, investigation revealed that he had a craniopharyngioma. No operative interference was attempted. Subsequently he was treated with cortisone, thyroid extract and methyl testosterone. As a result he gained one stone in weight and one and a half inches in height in fifteen months. He felt

much better, was not worried by weakness or lassitude, had grown scanty axillary hair, and had noticed some enlargement of the genitalia, as well as some increase in muscular development. The condition was summed up as panhypopituitarism due to craniopharyngioma treated by substitution therapy.

Arthritis Clinic.

DR. S. G. NELSON, DR. T. W. BURGESS, DR. J. R. SANDS and DR. G. E. CROWTHER presented a group of patients from the arthritis clinic.

Osteitis Condensans.

A married woman, aged twenty-nine years, the mother of three children, had been referred from the Ryde District Soldiers' Memorial Hospital in May, 1953, with a history of pain and stiffness of the left hip since the age of fourteen years. More recently she had developed similar signs in the lumbar and thoracic regions of the spine. She was then three months pregnant. She had a chronic cough with production of yellow sputum, but there was no clubbing of the fingers, and her chest X-ray film was normal. One of her sisters had arthritis. Examination of the patient revealed that back movements were a little stiff, but no ankylosis or local tenderness was found. X-ray examination in normal projection showed abnormality of the sacro-iliac joints, but there was some difference of opinion on whether the sacral side of the joints was affected. Her chest expansion was one and a quarter inches. Her hæmoglobin value was 12·5 grammes *per centum*, and her erythrocyte sedimentation rate was 13 millimetres in an hour by the Hawkesley micromethod. She was treated with analgesics and sedatives only and was examined at intervals with review of the X-ray appearances. No true deterioration of condition had occurred, but the patient still complained of low back pain to some extent relieved by "Butazolidin". At the present time her erythrocyte sedimentation rate was seven millimetres per hour, and X-ray examinations showed sclerosis of the ilial side of the sacro-iliac joint, with possibly some sclerosis of the sacral side, but no definite changes in the joint line. The diagnosis was considered to lie between very mild ankylosing spondylitis and *osteitis condensans ilii*.

Frozen Shoulder and the Intraarticular Injection of Hydrocortisone.

A married woman, aged fifty-eight years, had first attended the clinic in March, 1955, complaining of a painful shoulder, worse on the left side than the right, and pain in the neck. She had restriction of abduction of the left shoulder to 65° and a corresponding reduction in the range of internal and external rotation. There was slight reduction of abduction of the right shoulder to 85°. Treatment was instituted with "Butazolidin" in a loading dose of 800 milligrammes followed by 200 milligrammes a day. Treatment was continued for two months with considerable improvement, but there was still restriction of movement of the shoulder on the left side and pain, and 1·5 millilitres of hydrocortisone were injected intraarticularly. The injection was followed by dramatic alleviation of the pain in the shoulder and increase in the range of movement.

A married woman, aged fifty-two years, had first attended the clinic in May, 1954, when she was suffering from a very painful right frozen shoulder which had been present for about three months. The range of movement through abduction and internal and external rotation was extremely limited. In June, 1954, she had to undergo a gynæcological operation, and at the same time the shoulder was gently manipulated, and a full range of abduction was obtained. During her post-operative stay in hospital she was given daily physiotherapy by means of infra-red rays and assisted active movements, and the shoulder was kept in abduction by a sling. On July 27, after she had been discharged from hospital, there was found to be some regression of her shoulder condition. Abduction was reduced to 35°. She was given injections of two millilitres of hydrocortisone into the right shoulder, and sent home to do exercises. At that time the technique used was the posterior approach into the shoulder joint. She reported again on August 3, and by that time had been considerably demoralized. She was in constant pain and seemed to be reacting to it very badly. The condition suggested the possibility of reflex sympathetic dystrophy, and stellate ganglion block was carried out on the right side with five millilitres of 1% "Novocain" solution. The block was repeated on August 17, and treatment was commenced with "Largactil", 25 milligrammes given three times a day by mouth. On August 24 she reported that the pain was much less and the stellate block was again repeated. On August 31 injections of 1·5 millilitres of hydrocortisone were given into each shoulder, as there was some pain in the other side as well, and the analgesic was changed to phenazone. By the end of September she was improving steadily. Treatment with "Butazolidin" was commenced on October 12, but produced no additional improvement. The hydrocortisone injection was repeated on December 7 and 21, 1954, and January 4, 1955. In February, 1955, she had a fair amount of aching at times, and was unable to sleep without analgesics. On March 22 she was referred to Dr. Burgess, who prescribed ultrasonic therapy, 2·5 watts per square centimetre for five minutes, to the right shoulder three times a week. Treatment was continued till May 3, 1955. There was now almost a full range of movement of the right shoulder, and the result was regarded as very satisfactory. It was pointed out that the case illustrated the obstinacy of some such cases, the failure of direct manipulation, the psychological changes in the patient, the partial relief from the intraarticular injection of hydrocortisone, and the benefit of ultrasonic treatment.

X-ray films were shown of a woman who had had pain in the region of the left shoulder and right hip for two months. Examination of the patient had revealed restriction of abduction of the shoulder and also of internal and external rotation. No objective signs were noted in the hip apart from local tenderness over the greater trochanter. The patient had undergone mastectomy for carcinoma of the breast three years previously. X-ray examination showed an osteolytic lesion in the head of the left humerus and also in the greater trochanter region of the right femur. The clinical appearance of the shoulder was indistinguishable from that of frozen shoulder.

A widow, aged sixty-nine years, had been referred to the clinic in March, 1955, with a complaint of pain in the right great toe and in the right hand in the region of the first carpo-metacarpal joint. The X-ray appearance was that of osteoarthritis. The blood uric acid content was 2·6 milligrammes per 100 millilitres. There was no history of episodic attacks to suggest gout. Osteoarthritic changes were also present in the knees. The patient was treated with "Butazolidin", and some relief was obtained, but the pain in the great toe joint still persisted. She was given two intraarticular injections of hydrocortisone acetate with considerable relief. A similar injection into the first carpo-metacarpal joint of the hand also produced relief. It was pointed out that in such cases the relief of pain often lasted very much longer than in rheumatoid joints similarly treated.

A man, aged forty-three years, had attended the clinic in April, 1955, with swelling of both knees. He had been previously treated as an in-patient in 1952, with a diagnosis of rheumatoid arthritis affecting the wrists, knees and ankles. Treatment had been carried out with gold injections and aspiration of the left knee joint. The sedimentation rate had varied from 10 to 17 millimetres per hour. X-ray examination of the feet had shown some erosion of the third metatarso-phalangeal joint and diminution of the joint space. The basal metabolic rate was *minus* 4%. The blood uric acid content was 2·2 milligrammes per 100 millilitres. When examined in April, 1955, the patient had anterior, posterior and lateral instability of the knee joints. The joints were aspirated, and 60 millilitres of slightly turbid fluid were removed from the left joint and 35 millilitres from the right knee joint. The erythrocyte sedimentation rate was 20 millimetres per hour. X-ray examination showed a hypertrophic osteoarthritic reaction of both knees with a complete loss of joint space and reactionary changes around the joint. On April 19 some 80 millilitres of fluid were removed from the left knee joint and 30 millilitres from the right knee joint; one and a half millilitres of hydrocortisone were injected into the joints. On April 26 the patient stated that his condition had improved. Treatment was then commenced with "Butazolidin", and the injection aspiration was repeated on May 3.

Exfoliative Dermatitis and Lung Tumour.

DR. BRUCE MACKIE showed a man, aged fifty-seven years, who had been brought to the casualty department in a delirious condition with generalized erythema both in sheets and in papules. He had been previously treated in the out-patient department for generalized dermatitis. He had had an itchy rash for about three years, at first in sporadic outbreaks of two to three weeks' duration, confined to the flexures of the upper limbs. After an attack of bronchial pneumonia in August, 1954, the rash had become more generalized, appearing on the backs of the hands in between the digits, and then on the trunk and lower limbs. The patient was a machinist working with metals, and in his work he came into contact with soft soap and soluble drilling

oil (an oily emulsion). He had worked for about ten years in country areas as a railway fettler. He had had recurrent attacks of bronchitis over the past twelve years. His mother had died from bronchopneumonia and his father from lead poisoning (he had been a painter). Clinical and special investigation of the patient revealed no abnormalities apart from the skin condition and the radiological appearance in the chest of a sharply defined rounded opacity about two inches in diameter in the region of the anterior segment of the upper lobe of the right lung. No calcification was present, but the radiologist said that the most likely diagnosis was hydatid cyst.

Neurofibromatosis.

Dr. Mackie also showed a mother and two sons suffering from neurofibromatosis. In each case the condition had begun in childhood as soft tumours in the skin. The mother thought that her mother might have had the same condition, and she thought that it was recognized as a trait of her mother's family. She herself had had one lesion excised, but no other had given her any trouble. Biopsy examination of a tumour from one of the sons showed a neurofibromatous structure.

Nodular Non-Toxic Goitre.

DR. S. H. LOVELL showed a married woman, aged fifty-seven years, who had been born at a town on the Clarence River and lived there all her life. About twenty years before coming to hospital she had noticed a lump on the left side of the lower part of her neck, and after its appearance she had become very nervy and irritable. The lump increased very slowly in size for about fifteen years and then began to become very much bigger. She was treated with "iodine", but then began to have attacks of extreme nervousness, palpitations, weakness, sweating, vomiting and tremor, and had to be admitted to hospital. The attacks came at intervals of two to four months and would last for two to four weeks. She also noticed dyspnœa on exertion and became breathless when lying on her left side. During the past year she had had treatment with what was possibly thiouracil. In February, 1955, she had a sudden attack of dizziness, dyspnœa and bleeding from the nose, coinciding with a pronounced increase in the size of the lump in her neck. Her past history contained no relevant features, and she had no family history of goitre. On examination, the patient was seen to be an obese woman whose face appeared swollen. Her skin was dry and smooth, and her hair was dry and tended to fall easily. A large firm nodule was palpable in the left lobe of the thyroid gland, the surface of which felt smooth; there appeared to be retrosternal extension. The trachea was deviated to the right. The right lobe of the thyroid was diffusely enlarged. There were no local or systemic signs of hyperthyroidism. The basal metabolic rate was *minus* 17%. The patient was treated with Lugol's iodine and thyroid gland, and as a result had become much brighter mentally with decrease of the swelling of the neck.

Jaundice from Various Causes.

DR. N. WYNDHAM, DR. A. JOHNSON and DR. E. V. BARLING presented details of five cases of jaundice from various causes.

A man, aged sixty-seven years, had presented with loss of appetite and obstructive jaundice of two weeks' duration. He was found to have a palpable mass in the right hypochondrium, and liver function tests revealed a serum bilirubin value of 25 milligrammes per 100 millilitres, a serum alkaline phosphatase value of 50 King-Armstrong units, a zinc sulphate turbidity of six units and a thymol turbidity expressed as "++". At laparotomy, the gall-bladder fossa was found to be filled with a large hard fixed necrotic mass to which the omentum was attached. Hard glands were found in the *porta hepatis* and in the head and body of the pancreas, as well as secondary deposits in the liver. The diagnosis was carcinoma of the gall-bladder. No palliative procedure was possible.

A man, aged sixty-seven years, had presented with pain in the epigastrium and loss of appetite for six months and transient jaundice with loss of weight for one month. His liver could be felt four fingers' breadth below the costal margin, and its edge was irregular and firm. Rectal examination disclosed the presence of carcinoma of the rectum. Liver function tests revealed a serum bilirubin value of 0·4 milligramme per 100 millilitres, a serum alkaline phosphatase value of 50 King-Armstrong units, a zinc sulphate turbidity of 10·5 units and a negative result in the thymol turbidity test. At operation the liver was found to be studded with secondary deposits. The primary rectal growth was mobile and could have been easily removed.

A man, aged fifty-two years, had a history of non-specific upper abdominal pain of several years' duration, with recent loss of weight and jaundice for five weeks. On examination he was found to be jaundiced with bile in his urine. His liver was palpable, smooth and firm. Liver function tests revealed a serum bilirubin value of 25·5 milligrammes *per centum*, a serum alkaline phosphatase value of 83·7 King-Armstrong units, a zinc sulphate turbidity of 3·5 units, a thymol turbidity of "+" and a prothrombin index of 46%. Gall-stones were visible in a plain X-ray film of the abdomen. At operation, a much dilated gall-bladder was found. The region at the junction of the cystic and hepatic ducts felt extremely craggy, as though full of calculi. The gall-bladder was removed. Incision into the craggy area showed the duct wall to be much thickened and firm as though involved by neoplasm. No lumen could be found in the upper part of the common bile duct or in the lower parts of the hepatic ducts. The upper part of the left hepatic duct in the *porta hepatis* was found to be patent; so this was joined across the obstructing mass by a "T" tube with its upper end in the left hepatic duct and its lower end in the common bile duct. A biopsy was taken from the obstructing mass. The pathologist reported that the gall-bladder was affected with chronic cholecystitis, and the appearances in the bile ducts were similar to those in the gall-bladder, which included proliferation of the Rokitanski crypts due to irritation. After operation the jaundice slowly lessened, and after five weeks the serum bilirubin content was eight milligrammes per 100 millilitres, the serum alkaline phosphatase content was 84 King-Armstrong units, the patient was eating well and was feeling generally better, and a choledochogram showed excretion of dye into the alimentary tract.

A woman, aged fifty-seven years, presented with jaundice, weakness, loss of weight and right-sided abdominal pain of two months' duration. On examination of the patient the liver was found to be palpable three fingers' breadth below the costal margin, and was hard and tender. She was deeply jaundiced and had bile in her urine. Liver function tests revealed a serum bilirubin value of 23 milligrammes per 100 millilitres, a serum alkaline phosphatase value of 38·4 King-Armstrong units, a zinc sulphate turbidity of eight units and a negative result from the thymol turbidity test. At operation an inoperable carcinoma of the head of the pancreas was found involving the common bile duct. Choledocho-jejunostomy and enteroanastomosis were performed. Immediately after operation the patient became anuric and died.

A married woman, aged twenty-one years, a native of southern Italy, had been resident in Australia for eighteen months. She was admitted to hospital on March 10, 1955, with a history of anorexia, nausea, vomiting, upper abdominal pain and jaundice, the symptoms having appeared in that order over the past seven weeks. Her liver was found to be partly enlarged and tender. On March 25 the pain became more intense, and pyrexia developed. Then a mass was discovered in the right hypochondrium, an urticarial rash developed on the arms, and the patient became very ill. On March 28 the abdomen was opened and a distended gall-bladder was found and drained; no stones were detected. The patient became very shocked after operation and recovered slowly. Two weeks later her condition deteriorated until, after four days, she passed a collapsed cystic structure *per rectum* with immediate improvement in her condition. Two days later she passed another cyst *per rectum*. She was now recovering slowly, and her jaundice was fading. The cysts were found on examination to be hydatid cysts. The results of Casoni and hydatid complement-fixation tests were positive. Liver function tests indicated obstruction with evidence of severe hepatocellular disease. The abdomen, chest and pelvis were radiologically normal.

(To be continued.)

Medical Societies.

PÆDIATRIC SOCIETY OF VICTORIA.

A MEETING of the Pædiatric Society of Victoria was held at the Royal Children's Hospital, Melbourne, on November 9, 1955.

Agammaglobulinæmia.

DR. T. MADDISON discussed the condition of agammaglobulinæmia and described a case in which he had carried

out the treatment at the Birmingham Children's Hospital. He said that the syndrome of recurrent bacterial infections in association with absent or very low levels of serum γ globulin had been first described by Burston in 1952. The patients were unable to form antibodies, although the remaining serum proteins were normal.

The case described was that of a boy born in April, 1953, at an overseas military hospital. The pregnancy and labour were normal. During the first twelve months he throve, but did have occasional unexplained fevers and attacks of diarrhœa. When aged one year, he was admitted to hospital with severe ulcerative stomatitis and finally received a course of "Aureomycin". He came to England when aged nineteen months, and in the following twelve months he had numerous upper respiratory tract infections.

In December, 1953, he was first admitted to the Birmingham Children's Hospital with a Proteus septicæmia and arthritis of the right knee joint. That responded rapidly to streptomycin. After his discharge from hospital in January, 1954, he developed a productive cough, which persisted until his next admission to hospital in August, 1954. During that time he had several febrile episodes, each lasting up to one week. His admission in August was precipitated by one of those episodes. On examination he was a pale, feverish boy with a productive cough. There were some areas of thrush inside the mouth, and on auscultation of the chest, numerous scattered râles were heard. The result of a Mantoux test was negative, and a chest X-ray examination showed consolidation in the upper lobe of the right lung. The patient had a definite leucopenia, the white cell count on his admission to hospital being only 3400 per cubic millimetre with 11% of polymorphonuclear cells. He was given a course of penicillin, but his cough remained, although his white cell count returned to normal. Towards the end of August, he was sent to a convalescent hospital. Whilst there he continued to run an intermittent temperature, and had a persistent cough and signs in the chest.

He was transferred back to Birmingham in October because of a flare-up in his chest infection. An X-ray examination of his chest revealed a left lower lobe consolidation. A course of streptomycin produced resolution of his temperature, but the local signs remained. Finally, in November, 1954, examination by filter-paper electrophoresis showed a gross specific depletion of γ globulin in the serum.

Dr. Maddison showed a slide of the patient's protein pattern contrasted with that of his parents. He said that the gross depletion of γ globulin was confirmed by the immunological method. Another interesting feature of the patient was that although he was group O, Rhesus positive, there were no α or β agglutinins present in his serum. Also, special tests had failed to demonstrate antibodies to diphtheria toxin, whooping-cough or vaccinia despite previous immunization and apparently successful vaccination. That confirmed the patient's defect in antibody production.

Treatment was commenced with injections of γ globulin, as the American workers had kept their patients free from infections by regular repeated injections. The dose used was 0·1 gramme per kilogram of body weight each month. Apart from using the appropriate antibiotics for the severe infections, that was the only therapy available. On this regime, he had remained well, had had no acute infections, but had had a persistent cough with clinical and radiological signs in the lower lobe of the left lung.

Dr. Maddison then described the other causes of low levels or absence of γ globulin in the serum and divided them into a primary and a secondary group, as described by Gitlin. He referred to recent work which had been done on the origin of γ globulin from plasma cells; and said that it was thought that primary congenital agammaglobulinæmia had a sex-linked inheritance like hæmophilia. In conclusion, he emphasized the fact that the condition was rare and that there were many factors, other than a low level of γ globulin, predisposing to infections.

DR. J. PERRY opened the discussion and thanked Dr. Maddison for acquainting him with the condition. He said that so far his investigations of γ globulin had been in connexion only with hepatitis and not with recurrent infections. He had made some estimations for Dr. Bowden in cases of unexplained deaths met with at the City Morgue, but no case had been found in which γ globulin was absent, although in some the level had been considered to be a little low.

DR. S. WILLIAMS asked why the γ globulin level was so low in nephrotic nephritis.

Dr. Maddison said that that was due to loss by the kidney.

DR. J. COLEBATCH offered a warning against the undesirability of using the investigation indiscriminately, as the condition was extremely rare, and there were many other reasons for recurrent infection.

DR. E. PRICE asked whether it would be possible to obtain reliable information from the test on whether in a closed infection the condition had become quiescent.

Dr. Maddison said that he did not know whether determination of the γ globulin level would give an answer.

The Treatment of Congenital Dislocation of the Hip by the Denis Browne Method.

DR. P. JONES and DR. D. STEPHENS gave a review of 20 cases of congenital dislocation of the hip in which treatment was by the Denis Browne method. During Dr. Jones's talk a film was shown to demonstrate the method. Dr. Jones said that the Denis Browne method of treatment commenced with manipulative reduction under general anæsthesia, the child being prone on a low table. Reduction was effected by steady pressure on the greater trochanter with one hand while the other hand held and circumducted the knee of the affected side. The femoral head was thus made to enter the acetabulum over the posterior rim, by the steady pressure directed along, not across, the femoral neck. The return of the head into the acetabulum could be felt as a distinct impulse or click. The hip was then abducted and, the prone position facilitating the next step, a plaster spica was applied. Reduction was maintained by an assistant raising both the patient's flexed knees and maintaining pressure on the sacrum to increase the abduction of the hips. Adhesive felt strips were placed over the posterior superior iliac spines and the thighs padded with flannelette bandage.

The plaster was then applied from umbilicus to mid-calf on the affected side and to mid-thigh on the opposite side. No special rest frame or table was required. Radiological confirmation was obtained, and after one month the plaster was replaced by the Denis Browne splint in the out-patient department. The splint consisted of two half-circle metal cuffs, completed by leather covers, each of which encircled the distal third of one thigh. The cuffs were joined to each other by a bar, which passed along the posterior aspects of the thighs. The bar was capable of elongation to accommodate longitudinal growth in the femora. It was loosely attached by a fabric loop to a webbing waist belt. Active movements were encouraged from this time, but were confined to movements within the coronal plane. The splint was retained until there was radiological evidence of adequate acetabular development to ensure stability of the hip. The splint was unique in that it maintained full abduction and flexion at all times, yet allowed a wide range of movement. When it was discarded, no other position was contrived. A transitory phase ensued, during which adduction and a normal full range of hip movement returned.

Dr. Jones said that the series of cases he would discuss consisted of 20 consecutive unselected new cases of congenital dislocation of the hip, 11 of which were bilateral; that made a total of 31 affected hips. The age at which diagnosis was made ranged from one month to four years and nine months. The average age at commencement of treatment was eighteen months. The 20 cases were comparable in every respect with other much larger series reported with regard to sex, family history and associated abnormalities. The patients were all treated from the time of diagnosis by the method described. Dr. Jones said that the report could be of short-term results only, and evaluation at that stage depended on assessing the proportion or percentage of stable reduced hips.

The criteria of stability were firstly clinical—namely, the absence of the characteristic rolling gait and a negative finding from the Trendelenburg test—and secondly radiological, in that the femoral head was adequately contained in a suitably shaped acetabular fossa and there was a normal Shenton's line. Of the 20 patients, 16 only could be reported on, as three were still in the splint, and one, though splinting was completed, was too young to walk, though other criteria were fulfilled. All 16 patients showed reduced and stable hips, as previously defined, representing a stability rate of 100%. That compared very favourably with other series, such as that of Puti and Scagliatte, who reported 93% of satisfactory results in 119 patients treated under one year of age, and that of Muller and Sedden who had 73% of satisfactory results in 292 patients.

Though the stability rate was gratifying, certain qualifications must be made in some cases. One patient had a limp, osteochondritis in one hip being the cause. Two patients had a limited range of internal rotation and flexion, each in one hip. Both their cases were complicated by osteochondritis and required long periods of splinting, for re-dislocation occurred after initial removal of the splint, requiring a

second period of splinting. In one of the cases, that of the oldest patient in the series, treatment was begun at the age of four years and nine months and in the other the patient had been out of the splint only three months. In both cases the range of movement was steadily improving, and both conformed to all the criteria.

The radiological results showed that in the 20 hips not affected by osteochondritis, the femoral epiphyses were of normal outline, shape and texture, except one which showed slight flattening. In the 11 hips which developed osteochondritis, only two epiphyses were normal; the remaining nine showed varying degrees of flattening or irregularity of outline.

The acetabular angle had been measured in each case, with the use of Hilgenreiner's base line through the triradiate cartilages, the angle being measured between that line and one passing through the outer tip of the acetabulum. The normal angle was less than 28° at birth and 20° at two years of age. The average at commencement of treatment was 40° and at completion of treatment 25°, though three individual hips still showed 30°, 30° and 28°. The length of the acetabular roof, by measurement, was possibly a little shorter than normal, in that some portion of the femoral head extended beyond a vertical line dropped from the acetabular margin. That was not incompatible with stability and, indeed, occurred in a proportion of normal hips.

Dr. Jones said that osteochondritis had occurred in 11 hips in their series of 31, an incidence of 39%. That incidence compared with the occurrence of 30% and 45% mentioned by Trueta, and 51% in Severin's series of patients treated after two years of age. The cause of the condition was uncertain, but had been attributed to interference with the vascular supply to the femoral epiphysis, either the capsular vessels or those of the *ligamentum teres*. In their series the incidence appeared to be 23% in patients treated under fifteen months of age and 44% in patients over that age.

In summing up, Dr. Jones said that the Denis Browne method of treatment appeared to have the following advantages:

1. Reduction was achieved by manipulation on anatomical lines and without any special equipment.

2. Radiological control was unnecessary.

3. The splint allowed active movement, which stimulated the development of the musculature of the hip.

4. Movements of the femoral head in the acetabulum stimulated acetabular growth.

5. The wide nursing area, the convenient splint and ambulation permitted the easy management of the children by the mother at home, after the initial reduction in hospital.

6. The period of splinting could be prolonged as long as necessary should acetabular development be slow.

7. Anteversion had not presented a problem in the series, although it might in a series comprising older age groups.

8. Interposed soft tissue could be dispersed by movements of the head in the acetabulum. Denis Browne referred to it as a self-centring mechanism.

DR. F. D. STEPHENS then continued the paper and said that he wished to enlarge on several points already mentioned by Dr. Jones. He discussed firstly the frog position or Lorenz No. 1 position, and said that all orthodox methods of treatment of congenital dislocation of the hip after reduction used the frog position of Lorenz No. 1 position for varying periods of time. The present regime differed from the orthodox in two ways—firstly, by maintaining the frog position throughout treatment, and secondly, by permitting maximum movement of the hip joint in full abduction. That was made possible by the Denis Browne bar.

The prolonged use of the frog position was preferred because of its great stability. That stability was obtained by the manœuvre of flexing and abducting the femur to 90°, a manœuvre which transferred the femoral attachment of the Bigelow's ligament (namely, the ilio-femoral line) from the front of the joint to the back. That substitution of the anterior ligaments for posterior ligaments was a normal anatomical feature of the 90° flexion and abduction position. No other position would make that particular transformation of ligaments. After replacement of the dislocated head in the socket, the switch of the ligaments over the superior aspect of the joint to the posterior insertion gave the necessary support above and behind which was required for maintenance of stable reduction. No other muscles, ligaments or capsular structures could be effectively brought to bear for that support as they were either over-stretched by the dislocating head or lying in a position of relaxation.

The head was prevented from riding out anteriorly by the pubo-femoral ligament—another capsular structure which, though slightly stretched by the displacement of the dislocated head, was placed in a position of maximum stretch in that particular frog position. In consequence, the femoral head was firmly imprisoned in the acetabulum anteriorly, above and behind, and the abducted position directed the head away from the weak inferior aspect.

Though the head of the femur could be replaced satisfactorily in the socket in many other positions, the maintenance of the head in the acetabulum then relied totally on well-fitting plaster casts and not on the intrinsic structures in the area around the joint. The position of extension and interal rotation might even tighten the ligaments of Bigelow across the anterior aspect of the neck of the femur, actually pushing the head towards the posterior margin of the acetabulum, a tendency which must be countered by special care in the application of the plaster.

Slow traction methods of reduction might lengthen all those important short ligaments, which then would be slack in the frog position; that would permit migration to take place either anteriorly or posteriorly.

Dr. Stephens then commented on radiological findings. The first related to the acetabular index, in which, according to Kleinberg and Lieberman (1936), the normal angles were less than 28° at birth and 20° at two years of age. In the present series of cases of dislocated hips, the average was 42° at the time of first diagnosis, ranging from 30° to 55°. By the end of the splinting that angle had been reduced to between 16° and 35°, with an average of 25°. The second related to development of the acetabular roof; measurement of the roof of the acetabulum was made in both a normal series of 50 hips of patients at varying ages and the hips of patients before removal of the bar. The length of the horizontal line of Perkins, between the medial bony margin of the iliac contribution of the acetabulum and the vertical line drawn from the outer margin of the roof of the acetabulum, was measured. In normal children at two, four, six and eight years of age, the lines measured approximately 2·0, 2·5, 3·0 and 3·5 centimetres; and at one and a half years of age the line was approximately 1·5 centimetres. In the X-ray films taken immediately prior to removal of the splint in the present series of cases, those children under the age of three years developed a roof which equalled the normal measurements. In those over the age of three years, the length of the line definitely lagged in most cases; that indicated that ossification in the acetabular rim was slow or deficient. Where the lag was appreciable, the splint should be retained for longer periods, especially if the angle was also high.

Dr. Stephens then discussed the problem of redislocation of the hip. He said that in the present small series, in four bilateral cases the hip had become redislocated on one side only on first coming out of the splint; that necessitated remanipulation and a further period in the splint. All hips were now stable.

It was now considered that three of the patients, all first treated between two and three years of age, had been taken out of the splint far too early. They had been in the splint for only six, seven and eight months respectively. Further periods of five, ten and eleven months were required to ensure stability. The fourth patient had been first treated at the age of four years and nine months; the initial period in the splint had been thirteen months, and the second period had been fifteen months.

Dr. Stephens said that because of the redislocations, they had reviewed, in retrospect, their indications for removal of the splint. They had studied by X-ray examination the acetabular index and the development of the acetabular roof. Consideration of the acetabular index in the four hips at the time of the first removal of the splint had revealed angles of between 20° and 30°; the angle was slightly above the normal value of 20°, but no higher than in some of the reduced hips which were stable with that inclination. On the second occasion of removal of the splint the angle had diminished by up to 10° in three cases, but in one no change was apparent. They therefore recommended retaining the splint until the angle was 25° or less; but if after prolonged observation the angle remained unaltered at a higher level of about 30°, then a therapeutic trial of weight-bearing without splinting could be begun.

Regarding the problem of osteochondritis, it was considered whether the osteochondritic changes should be treated as for Perthes's disease, by prolonged bed rest without weight-bearing, or whether the radiological change in the femoral head should be disregarded except when painful. It was proposed to treat the osteochondritic changes in the femoral

heads of the next 20 patients by prolonged absence of weight-bearing and to compare the final appearances of the heads.

Dr. Stephens commented on early diagnosis and said that in their small series, as in other reported series, such as that of Putti, they had found that the results were better in the under fifteen months age group. The head and acetabulum developed more quickly after reduction, the splinting was shorter in duration, and the osteochondritis rate was half that in the over fifteen months group in their series.

They wished to emphasize that it was the duty of the obstetrician and the pædiatrician to examine the newborn child for dislocation of the hip just as meticulously as he would listen for heart murmurs, look at the palate or feel for the femoral pulses. The test which they considered the most valuable, the most simple and most speedy was the hip abduction test. If abduction was limited, the hips must be considered to be dislocated until proved otherwise.

In summary, Dr. Stephens said that they thought that in their small series of cases in which treatment was along the lines indicated, there was a very satisfactory stability rate. They were perhaps more hopeful that it was the ideal method because they had been able both to study the technique and to see so many cases pass satisfactorily through the hands of their teacher and fellow Australian, Dr. Denis Browne.

They considered that the abducted and flexed position was the most stable position in which to splint the hip. It was the position which gave great stimulus to acetabular growth.

The two radiological criteria—namely, the acetabular index and the measurement of the acetabular roof—were of substantial assistance in assessing progressive acetabular enlargement. Those criteria should be fulfilled in the under three years age group before abandoning the splint.

In the over three years age group, the improvement in the criteria often lagged. Splinting should be continued for six months after the measurements showed no further substantial improvement in that older age group.

If radiological criteria were not used for assessing acetabular development, then the time to abandon splinting must be by guess-work. A therapeutic trial of weight-bearing without splinting was required in either case. Should the dislocation recur, a further period of splinting had resulted in satisfactory stability in four cases in the series. They considered that radiological criteria were better than no criteria.

Osteochondritis in the present series was twice as common in those children who received treatment first after the weight-bearing period. It was agreed that improvement in that condition could best be obtained by early diagnosis before weight-bearing.

DR. J. COLQUHOUN, in opening the discussion, thanked the speakers for bringing forward a series of cases in which treatment was by a special method. The series was small, but a serious attempt had been made to analyse the results. He discussed briefly three points: first, the question of diagnosis, second, the method of reduction, and third, the method of retention, reduction having been obtained. Dr. Colquhoun said that, despite the teaching of early diagnosis for more than twenty years in the hospital, in the present series no more than six cases had been diagnosed in patients under the age of a year. Putti had always stated that even the very best treatment produced no more than 55% of good results in unilateral cases if the patients were treated after the age of walking, and less than 50% in bilateral cases. Probably the early diagnosis in infancy would be the only way in which they could significantly improve their results. He found that in the newborn baby, the appearance of the pelvis was helpful, especially in bilateral cases. The pelvis looked more like the adult female pelvis. In unilateral cases, one side of the pelvis might appear enlarged; and when there were folds on the inner side of the thigh, one should be suspicious and apply further tests. With regard to reduction, the method described was not very different from that used by most people nowadays. He thought that the Denucé method was very much less traumatic. Denis Browne, in writing of his method, had said that the head was forced in with a "crash", and Dr. Colquhoun thought that was why most people did not use it. In the gentle method of Denucé the head went in with a "flip" or a "click". However, some hips would not go back, but Denis Browne had not had that experience nor had it been found in the present series. Dr. Colquhoun thought that the Denis Browne method of immobilization was quite good in 75% of cases, but the high incidence of redislocation would make him rather chary of using it. He considered that the period of immobilization seemed unduly long in some of the cases in the series.

DR. J. WHITAKER said that Denis Browne was lucky to have two such able disciples in Australia. Denis Browne had done a great deal for pædiatric surgery in general, and all owed him a debt.

In commenting on the reduction in the method described, Dr. Whitaker said that there was no doubt that one could get more full abduction with the child on his back than on his face, and he would rather carry out the reduction with the child in the former position. He thought that a lot of "failed reductions" were due to incomplete abduction. However, he was impressed with the suppleness of the hip in this method, and thought that it contrasted with the stiff hip that was obtained for a period in the Lorenz method. The occurrence of osteochondritis was probably as high as in other series. The problem of the unreduced hip did not seem to have arisen in the present series, and that seemed to be of the utmost importance.

DR. E. PRICE said that the large number of treatments advocated for the condition indicated that it was a difficult condition to treat. Most methods resolved themselves into three parts: a full reduction, adequate retention and a reasonable amount of function, although function was not altogether compatible with retention. He had originally learned his method of reduction from Dr. Charles Osborne, but had added to that internal rotation, which he felt was necessary to obtain full reduction. When abbreviated plasters had been recommended by those working in hot climates, he had tried them; but as some hips had fallen out again rather quickly, he had gone back to the Lorenz type of plaster. However, more recently he had been using the Batchelor type of plaster after the first three months, with more success. The hips seemed to remain stable, and yet more movement was obtained. He also preferred to reduce the hip in adduction instead of in abduction, because he felt that that relaxed the ligaments. When he had tried the Denis Browne method of reduction, his proportion of osteochondritis had gone up, although he always had about a third. The problems with which he had become confronted were, first, the failure to get primary reduction and, second, a late subluxation, and finally the stiff hip. Dr. Price then showed a slide illustrating his results in a series of cases during two years ending June 30, 1954. The cases were quite unselected; there were 40 dislocated hips in 28 cases, and six cases were marginal. In only 27 cases was closed reduction successful, and in seven cases reduction was unsuccessful, the hips being treated by open reduction. The average age of the patients whose hips were successfully reduced was one year and nine months. There was a good clinical and X-ray result in 12 cases, a good clinical result but X-ray dysplasia in seven; in other words, 19 out of 26 cases (one still in treatment) yielded such a result as the speakers had shown. In four cases late subluxation occurred. Treatment in two of those was by osteotomy with good results, and in two by open reduction. A limbus was found, but a poor result was obtained. Three of the joints were "stiff".

DR. J. JENS said that the Denis Browne method differed in one important respect from the other treatments in that it was a functional treatment. The weight of the body to some extent and certainly the activity of muscles and bones on general development must be a powerful factor in the good results obtained. He also thought that the most important factor in successful treatment of the condition was early diagnosis, and the most useful test in the newborn was the "empty buttock" sign. Practice in palpating the normal newborn buttock was important in obtaining the "touch" for diagnosing the condition at that stage.

The morphology of the congenital hip was not uniform, as almost each hip had its own set up; the acetabulum, the state of the head and the neck, the relation of size, the capsule, the limbus and the fibrosis occurring in the acetabular cavity all differed, and all warranted special consideration. Arthrograms had been a big step forward in the diagnosis of the differences. Actual measurement should also be made of the anteversion of the neck on the shaft. All those points were becoming more prominent in the actual handling of patients, and one could diagnose in the early stages those patients who would need open reduction, rather than wasting time on the simple methods first.

It had always been said that, at the best, a reduced hip would see only twenty-five years. If osteochondritis that developed was to be treated by complete rest and absence of weight-bearing, then there would be a lot of beds full for a number of years, because it would take years for the X-ray appearances to clear. The use of a caliper relieved the pain, but had no effect on the radiological picture and little effect on the range of movements to examination. Crago in St. Louis, Sedden in London and Scott at Oxford had given a lead in the "traction" form of treatment, and

had obtained a big reduction in the amount of osteochondritis. The long-term results in adult life were more important than just getting a reduction in the infantile stage.

DR. P. WILLIAMS asked whether Dr. Jones really meant that X-ray control was unnecessary during reduction because he thought that most people had had the experience of thinking that reduction had been achieved, only to find the head in the *obturator foramen* or some other odd position. Also it had been found by arthrograms and lateral radiography that what appeared to be a good reduction was not necessarily so.

He went on to say that although it might appear on theoretical grounds that the frog position was the most stable after reduction, he wondered how Dr. Stephens explained the not inconsiderable number of hips that were more stable in full internal rotation. Regarding the method of assessment of good results, he thought that a good functional result could be obtained by almost every method. Perkins had stated that one just had to put the patients into position and tie them to a broomstick and they would walk well afterwards. The important feature was a good radiological result and a hip that was not going to wear out prematurely. He thought that many of the hips shown at the meeting were still in fact dysplastic hips and that the patients would appear at the adult hospitals before the age of forty years demanding an arthroplasty. The work of Somerville on the limbus and anteversion had been the first real contribution to the subject in the last thirty years, and he (Dr. Williams) could not help feeling that the path to success was along an understanding of the soft parts concerned in the condition.

DR. F. STONHAM emphasized some of the points discussed by Dr. Jens and Dr. Williams, especially the different features of individual hips, such as the abnormal limbus which might obstruct reduction, the abnormal capsule, constricted or unduly lax, and the head of the femur itself, which might be abnormal. He said that no one method could be relied upon for uniformly successful results. The Lorenz position had advantages and disadvantages; the hip might not be stable in that position, and therefore one should use a position in which it was stable. He thought that that position also put a spiral twist on the capsule. That might help it stay in position, but might interfere with the blood supply and produce osteochondritis.

DR. W. FORSTER asked whether in the cases of osteochondritis the patients should be treated as in other cases of *coxa vara* and be rested for a considerable time. He also thought that the question of anteversion of the neck was important; in the Lorenz position they tended to "pop out" if that was present. In such cases he thought the results were better if the patients were put up in the reverse frog position.

DR. C. MCNEUR referred to the method of slow reduction on a frame. He said that the Royal National Orthopædic Hospital, London, used the method entirely for congenital dislocation. There was no manipulative reduction carried out at all. They had been most impressed with the percentage of reductions obtained on the frame and the diminution in osteochondritic change of the femoral head, those being about halved. Of course, all hips did not go back, and open reduction was carried out in a few cases. In most of those a large limbus was found and excised. Regarding immobilization, their practice had been after reduction to give an anæsthetic, feel the head to find the most stable position and immobilize the patient in that position, but with the hips down, so that there was complete freedom of flexion.

DR. J. CRITCHLEY emphasized some points of the other speakers and said that he thought osteochondritis of the femoral head should be treated like that in any other bone in the body; so that one should prevent weight-bearing till the head had returned to its natural shape again.

Dr. Jones, in reply to the questions, said that the average duration of immobilization for 16 cases, excluding the four requiring a second period, was ten and a half months. In the whole group it was eighteen months. The longest was thirty-two months.

Dr. Stephens, in reply, said that not all cases reduced with a "crunch"; some were silent. He thought that in patients over the age of four years the problem was a different one, and many of the difficulties speakers had referred to occurred in that group. Such things as a limbus or anteversion were likely to reach red herring proportions in the "under fours".

Regarding radiological control of reduction, he thought that if the hip could be fully abducted, then the head was in. They had not prepared arthrograms. He thought that the limbus had a function and should not be excised in the young subjects. He had carried out X-ray examination of a number of normal children in all positions to see how much of the head appeared outside the line of the ossified acetabulum; in over one-third the head came out in hyperextension, and in one-quarter it was in flexion. In the dislocated hip the acetabulum might be smaller; when it was reduced, more than a third of the head came out in the front and back in X-ray views. He thought that the limbus must play some part in keeping the head in position.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

PRIMITIVE SURGERY.[1]

[From "An Historical Journal of the Transactions at Port Jackson and Norfolk Island", by John Hunter, Esq., Post Captain in His Majesty's Navy, London, 1793.]

February, 1791.

THOUGH our colonists have never been able to learn the reason for the females losing two joints of the little finger, they now had an opportunity of seeing in what manner that operation is performed. Colebe's wife brought her child to Governor Phillip's house a few days after it was born, and as it was a female, both the father and mother had been repeatedly told, that if the finger was to be cut off, the Governor wished to see the operation. The child was not two months old, and a ligature was applied round the little finger at the second joint: but two or three days afterwards, when she brought the child again, the ligature was either broke, or had been taken off: this being mentioned to the mother, she took several hairs from the head of an officer who was present, and bound them very tight round the child's finger. After some time a gangrene took place: and though the child appeared uneasy, when the finger was touched, it did not cry, nor was any attention paid to it, after the ligature was applied. It has already been observed that this operation always took place on the left hand of the females: but this child was an exception for it was the little finger of the right hand on which the ligature was applied: this bandage was continued until the finger was ready to drop off, when the parents carried it to the surgeon, who, at their request, separated it with a knife.

Correspondence.

POLIOMYELITIS VACCINE.

SIR: I refer to your leading article headed "Poliomyelitis Vaccine" in the issue of February 18, 1956.

I would like to assure your readers that no poliomyelitis vaccine will be released from the Commonwealth Serum Laboratories until it has been subjected to an independent check in addition to the routine tests at the Commonwealth Serum Laboratories and the vaccine is believed to be completely safe.

On November 15 the Commonwealth Director-General of Health, Dr. A. J. Metcalfe, wrote to Dr. H. McLorinan, Medical Superintendent of Fairfield Hospital, Fairfield, asking him if he would be prepared in the public interest "to permit your Laboratories to serve as the independent testing authority for a period of approximately twelve months; it being understood that the Commonwealth will contribute towards defraying costs incurred during the year and in addition will supply expendable stores free of charge and the necessary equipment on loan". The Director-General stated: "May I add that your co-operation in this important activity would be deeply appreciated by the Minister and by myself. We will be most grateful for any assistance you can render in arranging for a completely independent check on the vaccine."

[1] From the original in the Mitchell Library, Sydney.

On December 2 Dr. McLorinan replied: "I can now advise that your letter of the 15th November was considered by the Board of Management at its last meeting. In the public interest and to facilitate early release of the vaccine the Board has agreed to permit its laboratories to serve as the independent testing authority for a period of twelve months." The letter goes on to state that the financial grant to the laboratories for this purpose would be "subject to review should your Department desire an extension of this work beyond twelve months".

Discussions on the details of these tests are now being undertaken between the Commonwealth Serum Laboratories and the Fairfield Hospital.

Yours, etc.,

Parliament House, Canberra, February 20, 1956. DONALD A. CAMERON.

FUNNEL CHEST: REPORT OF A SERIES OF 100 CASES.

SIR: I should like to thank Dr. D'Arcy Sutherland for his comments (M. J. AUSTRALIA, January 28, 1956) on my recent article on funnel chest.

With regard to the transverse incision, it is true that I use this for all cases, both child and adult. Using it, I have been able to resect costal cartilages from the second to seventh inclusive without operative inconvenience. In any case, I should be prepared to undergo a certain amount of this to obtain the cosmetic advantages which this incision confers.

With regard to the age of patients presented for operation, my feeling is that psychological features are less likely to be of vital importance in the older age groups, and that any cardio-respiratory symptoms should be considered reasonable for interference.

I am very much in agreement with Mr. Sutherland's contention that the benefits of operation are physical as well as cosmetic and psychological. The further I have proceeded with this study the more convinced on this matter have I become.

Yours, etc.,

Royal Children's Hospital, Melbourne, February 14, 1956. RUSSELL HOWARD.

OBSERVATIONS UPON 250 CASES OF BLEEDING PEPTIC ULCER.

SIR: Dr. Newton, challenged to produce a workable formula for the selection of cases for surgery, now changes his ground and raises the smoke screen of "clinical judgement"—selection of cases, he says, must depend on clinical judgement in the individual case.

Clinical judgement is surely nothing else than an estimate of probabilities based on past experience; the best record of past experience is to be found in case records, or statistics. Clinical judgement which cannot be related to statistical evidence is guesswork. If a clinician, for instance, decides to operate upon some cases of bleeding ulcer and not upon others, but cannot give you a fairly exact set of criteria (a formula) upon which he bases his decisions, then he is most surely making his selection by guesswork, and this fact cannot be obscured by using the term "clinical judgement". It is regrettable that in many fields of medicine our knowledge is so inexact that clinical judgement has of necessity to be made by guesswork, but there is no necessity or justification for using guesswork in the selection of cases of bleeding ulcer for surgical treatment; unless we can do better than this, we should rely on the reasonably satisfactory results to be obtained by medical treatment.

Dr. Newton denies my statement that the operation of partial gastrectomy done as a true emergency to arrest bleeding carries a considerable mortality; this was the experience in the series of cases which I reported, but may I quote as additional evidence the figure of 9·2% stated by Fraenkel and Truelove as the mortality for this operation performed on 76 cases in their series of 540 cases of bleeding peptic ulcer at the Radcliffe Infirmary, Oxford, and reported in the *British Medical Journal* of April 23, 1955? This figure is a particularly suitable one to quote because the authors are careful to define exactly what they mean by "emergency gastrectomy" and have excluded cases which more properly come under the heading of elective gastrectomy. Many so-called emergency gastrectomies, of course, are done when the bleeding has not been dangerous, or after it has ceased for some time and the hæmoglobin level perhaps restored to near normal prior to operation; such operations, as pointed out by Fraenkel and Truelove, are early elective operations; the mortality should be correspondingly low, and the cases involved do not include many of the real problems in treatment.

Dr. Newton reiterates his strong objection to the practice of restricted transfusion which I advocate. He is, of course, quite entitled to hold this belief; my only concern is to make it clear that his condemnation of the method is not based on any practical experience of it. His recital of the various possible ill-effects of severe anæmia (which are well known) is a red herring. The only question which needs to be considered here is whether a policy of restricted transfusion will save more lives than a policy of free transfusion in the group of patients suffering from bleeding peptic ulcer and under medical treatment. This question I suggest can only be answered by practical experience. If the answer turns out to be in the affirmative, then the various theoretical disadvantages of maintaining an anæmic state can be ignored in this context.

Yours, etc.,

Repatriation General Hospital, Concord, New South Wales. February 16, 1956. W. K. MANNING.

[This correspondence is now closed.—EDITOR.]

THE BRITISH MEDICAL ASSOCIATION AND ITS MEMBERS.

SIR: Dr. Munro Alexander is to be congratulated on his attempt to awaken medical practitioners in this State to a keener sense of their responsibility towards the British Medical Association. He might, I think, have amplified the range of his appeal to include an awareness by the British Medical Association State Council of their responsibilities towards the rank and file of members.

Few aspects of public life are more irritating than criticism (often uninformed and frivolous) of those who work by those who do not, but the implication that members of the Council have by attending meetings and subcommittees, however assiduously, discharged their obligations to the medical public and rendered themselves immune from criticism, seems to me completely fantastic.

I do not agree with Dr. Alexander in his statement that what is expected of the British Medical Association is an increase in income. What is lacking is much more significant, a sense of leadership and guidance. The British Medical Association Council seems to me to be incompletely aware of, and indifferent to, the problems confronting the average doctor today, with particular reference to those who are beginning their life's work, whether it be in general or specialist practice.

When it is considered that a large proportion of the personnel of the Council consists either of consultants so senior that they cannot have had any contact with teaching hospitals or students since the end of the war, and well-established general practitioners, this detachment is not surprising, but it is none the less to be regretted.

It has been said that we get the politicians we deserve, and that if people will not attend meetings or vote at elections they cannot complain about their representation on the Council. Certainly there is a very unsatisfactory response in this way, but it is nevertheless true that several consultants, all with good records in the services, have been elected to the Council since the war, only to resign in a regrettably short time, baffled by the frustrating alternatives of following the Party Line or achieving nothing.

During three separate phases of my professional life I have felt profoundly the need of some support or encouragement from the British Medical Association. On each occasion this has failed to materialize.

Some years before the war I was appointed as honorary anæsthetist to the Royal North Shore Hospital. In the latter part of 1938 the entire staff was asked to resign their appointments and make fresh applications. This was considered slightly unusual by most of us, but we were told that it was purely a matter of form. Twelve of us failed to secure reappointment. The motives and mechanisms

underlying this strange coup were a complete mystery. The twelve dispossessed were united seemingly by no bond of politics, friendship or religion. Their names might well have been drawn out of a hat. The effect on all of us, however, of this non-reappointment was most disturbing. Appeals to the Minister for Health and the British Medical Association—sometimes described erroneously as the strongest trades union in the world—as if any self-respecting trades union would permit such victimization of its members!—were equally fruitless. Finally, almost a year later after a great deal of lobbying, endless meetings and the help and encouragement of a few non-medical supporters, we were informed that an inquiry was to be held by the appropriate authority. This, of course, involved legal representation, which we felt should be of the highest quality. In short, we each paid £50 per week. Fortunately the inquiry lasted only five weeks, because my financial resources were then exhausted. Several months later in Palestine I was informed that I had been reinstated on the staff of the hospital—without the help or blessing of the British Medical Association.

Immediately after the war many of us, demobilized from the services, were at a great disadvantage owing to the difficulty in obtaining professional rooms and motor-cars. Again our Association was depressingly inadequate.

Since 1948 the New South Wales Branch of the Australian Society of Anæsthetists (identical in personnel with the British Medical Association State Section) has written frequently to the British Medical Association on matters concerning the welfare, status and, in some places, payment of anæsthetists.

When the letters were acknowledged, which was rarely the case, the stock reply was to the effect that the British Medical Association State Council reaffirmed its belief in the honorary system, which had never been in question anyway. There was a complete lack of any sense of cooperation, opinion or support.

When the State Council recently invited the Executive of the New South Wales Branch of the Australian Society of Anæsthetists to meet them and discuss some of these problems, it was at once apparent that the members of the subcommittee were quite unaware of most of what had gone before, having no correspondence whatever relevant to the discussion, which eventually took place on the basis of carbon copies of letters from the Society to the British Medical Association.

At a meeting some years ago called to discuss the insultingly inadequate sessional payments offered by the Repatriation Department to consultants visiting Concord or the Grace Building, the British Medical Association spokesman presented the usual apologetic, don't-let-us-upset-anyone attitude and advised us to reapply for appointments under conditions offered, as nothing more could be done then. The British Medical Association would "try" to have things improved. (Whether because of or in spite of the efforts of the Council, sessional payments have recently been considerably increased!)

It must, of course, be realized that our executive body cannot favour any particular group of the profession at the expense of the rest, but this persistent disinclination to answer letters or take any positive action in facing current problems and the tendency to postpone indefinitely the consideration of an awkward situation are, I think, important causes of the malaise and disenchantment affecting many members of the profession in this State today.

You will see, sir, that my personal experience has hardly been of a nature to inspire confidence in the forward-looking and planning of our Association, so highly desirable in the face of changing habits and customs, as well as all the other medico-political problems of our time.

Yours, etc.,

143 Macquarie Street, J. F. McCULLOCH.
Sydney,
February 17, 1956.

THE PRESENT POSITION OF THE ARMY MEDICAL SERVICES IN AUSTRALIA: A NATIONAL SCANDAL.

SIR: I have read with interest recent letters on the army medical service. A recent graduate (qualified Adelaide, 1951), I spent from February, 1953, to February, 1955, in the Royal Australian Army Medical Corps, mainly at Ingleburn in New South Wales.

Things which I enjoyed in that time could be listed as: (i) good pay; (ii) pleasant living conditions and social life; (iii) a fair amount of medical interest in assessment, infectious diseases, and minor injuries of a large body of National Service and regular troops.

Things which frustrated, irritated and finally killed my interest were: (i) lack of facilities; in a 70-bed hospital serving over 5000 troops there were no operating or laboratory facilities, though it possessed a reasonable X-ray plant and at that time an excellent X-ray technician; (ii) regulations which prohibited entirely the use of general anæsthesia in the hospital; (iii) lack of professional liaison with the Repatriation octopus hospital at Concord—on repeated requests a few case-notes on soldier patients of interest were seen late in 1954.

In my view new graduates are not seeking immediate financial return in their first years out but improvement of their knowledge and methods, and often a clarification of their own ideas. The army policy of that time seemed intent on maintaining its hospitals as casualty clearing stations: with a progressive policy, the provision of small operating theatre, laboratory, and senior man as surgeon could transform them into efficient units handling 98% of the work in the area. The Repatriation hospital bed states have too long been padded out with service patients, who should be dealt with quickly and efficiently in their own area. The development of efficient peace-time hospital units, proud of their ability to do a job, and the association of research units into tropical diseases, or others of army interest, would see a steady flow of graduates to the services for periods of two to three years.

Sacrifice of time and money can rightly be expected of us for defence, but not sacrifice of knowledge in modern medicine, which may be sorely needed in time of war. The Government, rather than the graduates, seems to be relying on the ready adaptation of the profession's civilian experience to that of war. I hope pressure from outside will aid the many fine men in the service to improve it in the way they desire.

Yours, etc.,

Busselton, R. C. McKINNON.
Western Australia,
February 14, 1956.

THE PENSIONER MEDICAL SERVICE.

SIR: While the Pensioner Medical Scheme is being made a subject of comment and consideration, it might not be out of place to compare the basic fee of 10s. with that of 10s. 6d. a half-century ago.

Yours, etc.,

Penshurst Street, A. A. LANG.
Willoughby,
New South Wales.
February 19, 1956.

STAMMER IS NOT NERVES.

SIR: There are a number of points in your review (November 5, 1955) of my recent book "Stammer is Not Nerves" which call for clarification and comment. Owing, however, to my preoccupations with some 70 students, I am compelled to confine myself to two of them.

My rejection of "relaxation" (often called "therapeutic relaxation") as practised by speech therapists and others as a means of stammer cure is based upon an appreciation of the physiology of motor skill and not, as your reviewer suggests, upon a confused concept of relaxation. Speaking is a specialized muscular skill, requiring for its use an effective neuromuscular coordination. The word "relaxation" is a misleading term to use in connexion with muscle skills. "Muscle balance" is a more appropriate term, since it does convey the idea of skilled muscle action as opposed to absence of action and muscle tone. I am opposed to the suggestion implicit in your reviewer's statement "it would be impossible to develop a beautifully coordinated system of motor skills for speech facility without a fundamental basis of relaxation", that to learn to relax is the essential first step in stammer cure. This is nonsense and physiologically ridiculous. I do not deny that, as all the world knows, the stammerer is over-tensed when attempting to speak. As

the stammerer under the physiological discipline of training acquires a learned speaking skill, he does progressively relax his excess tension. But, until he has acquired an entirely new speaking skill in place of his stammering skill, the individual can never be wholly free from excess tension in relation to speaking to others (apart, perhaps, from the artificial conditions of the therapeutic couch, when, in fact, he speaks with that "stammering fluency" he practises when alone). In suggesting that any stammerer ever speaks æsthetically your reviewer advertises his own insensitive and undiscriminating ear (brain) and his consequent inability to distinguish between speaking skill and stammering fluency. He thereby demonstrates a confused concept of the true nature of stammering speech.

Your reviewer's suggestion that my personality is responsible for my consistently successful experience in completely curing cases of confirmed stammering—many of many years' standing—is arrant nonsense and shameful in a medical publication. It is comparable to suggesting that a surgeon with a suitable personality could operate successfully irrespective of any surgical skill, or that the possessor of a powerful personality could win the All England Tennis Championship irrespective of technique at tennis. It should not be necessary for me to remind your reviewer that the possession of a technique or the lack of it is the master of any performance. The validity of a consistently successful method of treatment is never in doubt. Whatever quality of personality I possess is the residuum of knowledge and experience in curing stammering. If that helps my pupils, then it is but a supplementary aid to the physiological and neurological knowledge I possess, and the tested and proved skills I display in the practical application of that knowledge and to which the beneficial results of my teachings bear testimony.

Yours, etc.,

110 Daneby Road,
Catford,
London, S.E.6,
England.
January 9, 1956.

H. V. HEMERY, L.R.A.M.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 8, of February 16, 1956.

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force: Medical Branch.

Squadron Leader J. McC. Morrison (036133) is appointed to a permanent commission, 2nd January, 1956.

The short-service commission of the following Flight Lieutenants is extended for a period of three years: R. W. L. Hall (024941), 10th January, 1956, F. J. G. Arnold (025085), 12th February, 1956, M. A. May (013705) (Acting Squadron Leader), 20th February, 1956, N. L. Groves (025211), 10th March, 1956.

The appointment of Flight Lieutenant R. L. Huppert (039929) is terminated, 23rd November, 1955, on medical grounds.

Active Citizen Air Force: Medical Branch.

No. 24 (City of Adelaide) Squadron.—Donald Barton McLeay (042513) is appointed to a commission, 3rd December, 1955, with the rank of Flight Lieutenant.

Sydney University Squadron.—Pilot Officer G. M. Lambert (0211519) is transferred from the Reserve, 5th October, 1955.

Adelaide University Squadron.—Pilot Officer E. W. Knight (052512) is transferred from the Reserve, 22nd September, 1955.

Air Force Reserve: Medical Branch.

The following are appointed to a commission with the rank of Flight Lieutenant: Nerine Brustolin (257939), Kenneth John Millar (257940), 11th August, 1955; Leo Anthony Stubber (295554), 5th September, 1955.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED FEBRUARY 11, 1956.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	1	2(2)	7(5)	..	1	..	..	..	11
Amœbiasis	..	..	..	..	2(1)	..	..	..	2
Ancylostomiasis	..	..	..	..	..	..	..	..	..
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	1	1	..	..	..	..	..	..	2
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	1(1)	1	..	..	..	..	..	..	2
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	2(2)	19(16)	6(6)	..	3(3)	..	..	..	30
Diphtheria	..	1(1)	..	..	1(1)	..	..	..	2
Dysentery (Bacillary)	..	2(2)	13(13)	..	..	..	..	..	15
Encephalitis	..	1	..	1(1)	..	..	..	..	2
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	3	..	..	3
Infective Hepatitis	218(144)	148(61)	..	26(16)	8(4)	..	4	9	413
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	..	..	..	..	..	..	..	..	..
Malaria	..	..	1(1)	..	..	..	..	..	1
Meningococcal Infection	1(1)	3(1)	..	..	..	..	..	..	4
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	2	6(3)	9(7)	6(4)	53(22)	..	1	77
Puerperal Fever	..	..	..	..	..	..	..	..	..
Rubella	..	35(22)	..	5(3)	2(1)	..	..	..	42
Salmonella Infection	..	..	..	..	..	..	..	..	..
Scarlet Fever	7(5)	5(3)	2	2(2)	..	..	..	..	16
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	13	..	..	..	13
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	41(22)	18(16)	49(14)	8(6)	9(4)	5(1)	2	..	132
Typhoid Fever	1	..	..	..	..	1	..	..	2
Typhus (Flea-, Mite- and Tick-borne)	..	..	1(1)	..	..	..	..	..	1
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

Air Cadet James Patrick O'Collins (036639) is appointed to a commission, provisionally, 1st August, 1955, with the rank of Pilot Officer.

The provisional appointment of Pilot Officer P. F. Bladin (034794) is confirmed and he is promoted to the rank of Flight Lieutenant, 10th December, 1954.

Flying Officer C. L. Willington (417686) is transferred from the General Duties Branch and he is promoted to the rank of Flight Lieutenant, 23rd September, 1955.

Flight Lieutenant (Temporary Wing Commander) V. E Knight (251197) is placed on the Retired List, 14th July, 1955.

The appointment of the following officers is terminated, 14th July, 1955: Flight Lieutenant (Temporary Squadron Leader) C. V. W. Brown (271467), Flight Lieutenant J. N. Brown (267083).

Corrigendum.

Owing to an error in correction the word and figures "July 30" were omitted from the first line of the article entitled "A Review of 268 Cases of Gastrectomy for Peptic Ulcer", by V. J. Kinsella, published in the issue of February 25, 1955, at page 305. The line should read "This review, up to July 30, 1955, includes the series of . . .". We regret this error.

The Royal Australasian College of Physicians.

VISIT OF THE PRESIDENT OF THE AMERICAN COLLEGE OF PHYSICIANS.

The President of the American College of Physicians, Dr. George F. Strong, F.A.C.P., F.R.C.P. (Lond.), F.R.C.P. (C.), of Vancouver, B.C., will arrive in Australia on March 9, 1956, on a goodwill visit to The Royal Australasian College of Physicians in Australia and New Zealand. He will be accompanied by Mrs. Strong. In Australia, Dr. and Mrs. Strong will visit Sydney, Canberra and Melbourne and will then leave for New Zealand, where they will attend the annual meeting of The Royal Australasian College of Physicians in Wellington from March 20 to 24, 1956.

An invitation is extended by the President and Council of The Royal Australasian College of Physicians to all members of the medical profession to attend a lecture to be given by Dr. Strong in the Stawell Hall of The Royal Australasian College of Physicians on Monday, March 12, 1956, at 8.15 p.m. The title of the lecture will be "Rehabilitation: Experience in a New Rehabilitation Centre in Vancouver".

Research.

NUFFIELD FOUNDATION AUSTRALIAN ADVISORY COMMITTEE.

The Chairman of the Nuffield Foundation Australian Advisory Committee, Sir John Medley, has announced that Nuffield Foundation Dominion Travelling Fellowships in Medicine have been awarded to Dr. Ross McDonald Anderson, of Melbourne, and Dr. Ross Treloar Wishart Reid, of Adelaide.

Deaths.

The following death has been announced:

Coutts.—Milton Leonard Coutts, on February 19, 1956, at Ashfield, Sydney.

Diary for the Month.

March 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
March 6.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
March 7.—Western Australian Branch, B.M.A.: Branch Council.
March 8.—New South Wales Branch, B.M.A.: Medical Politics Committee.
March 9.—Tasmanian Branch, B.M.A.: Council Meeting.
March 9.—Queensland Branch, B.M.A.: Council Meeting.
March 13.—New South Wales Branch, B.M.A.: Ethics Committee.
March 15.—New South Wales Branch, B.M.A.: Clinical Meeting.
March 17.—Western Australian Branch, B.M.A.: Annual General Meeting.
March 19.—Victorian Branch, B.M.A.: Finance Subcommittee.
March 20.—New South Wales Branch, B.M.A.: Council Quarterly.
March 21.—Victorian Branch, B.M.A.: Clinical Meeting.
March 22.—Victorian Branch, B.M.A.: Executive of Branch Council.
March 22.—New South Wales Branch, B.M.A.: Annual Meeting.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 8 King's Park, West Perth): Norseman Hospital; all contract practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to the Editor, The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

Members and subscribers are requested to notify the Manager, The Medical Journal of Australia, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

Subscription Rates.—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rate is £5 *per annum* within Australia and the British Commonwealth of Nations, and £6 10s. *per annum* within America and foreign countries, payable in advance.